AV-20320
AV-20321

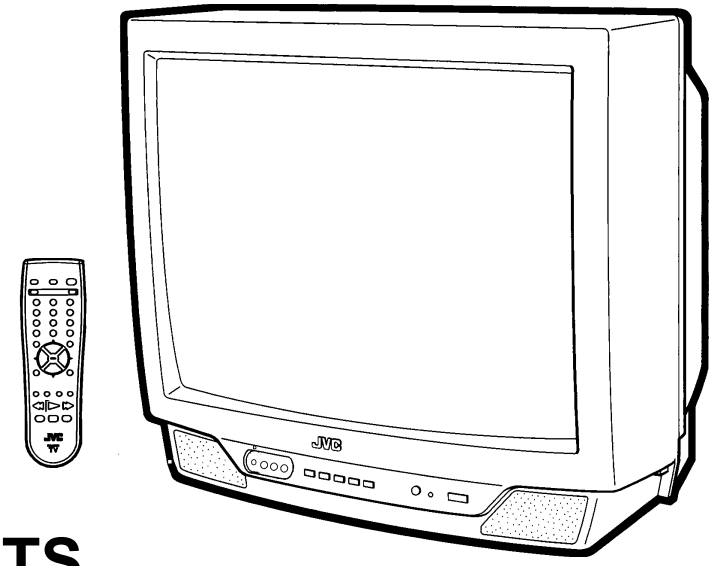
JVC

SERVICE MANUAL

COLOR TELEVISION

BASIC CHASSIS
FV5

AV-20320/S
AV-20321/S



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SPECIFICATIONS

Items	Content
Dimensions (W × H × D)	19-7/8" × 17-7/8" × 19-1/2" / 50.3cm × 45.2cm × 49.3cm
Mass	43.8 lbs / 19.9 kg
TV RF System	CCIR(M)
Color Sound System	NTSC / BTSC System (Multi Channel Sound)
TV Receiving Channels and Frequency	
VL Band	(02～06) 54MHz～88MHz
VH Band	(07～13) 174MHz～216MHz
UHF Band	(14～69) 470MHz～806MHz
CATV Receiving Channels and Frequency	
Low Band	(02～06, A-8) by (02～06&01)
High Band	(07～13) by (07～13)
Mid Band	(A～1) by (14～22) (54MHz～804MHz)
Super Band	(J～W) by (23～36)
Hyper Band	(W+1～W+28) by (37～64)
Ultra Band	(W+29～W+84) by (65～125)
Sub Mid Band	(A8, A4～A1) by (01, 96～99)
TV/CATV Total Channel	180 Channels
Intermediate Frequency	
Video IF Carrier	45.75MHz
Sound IF Carrier	41.25MHz (4.5MHz)
Color Sub Carrier	3.58MHz
Power Input	120V AC, 60Hz
Power Consumption	87W (US) / 1.4A (CA)
Picture Tube	20" (51cm) Measured Diagonally
High Voltage	26.5kV±1kV (at zero beam current)
Speaker	2" × 3-1/2" / 5 × 9cm Oval type × 2
Audio Power Output	1W+1W
Input	
Video Input	1Vp-p, 75Ω (RCA pin jack)
Audio Input	500mVrms (-4dBs) ,High Impedance (RCA pin jack)
Fix Audio Output	500mVrms(-4dBs) Low impedance (400Hz when modulated 100%) (RCA pin jack)
Headphone Jack	3.5mm stereo mini jack (Sound is stereo)
Antenna Terminal	75Ω (VHF/UHF) Terminal, F-Type Connector
Remote Control Unit	RM-C205-1C (AV-20320/S) RM-C205W-1C (AV-20321/S) (AA/R6/UM-3 battery × 2)

Design & specifications are subject to change without notice.

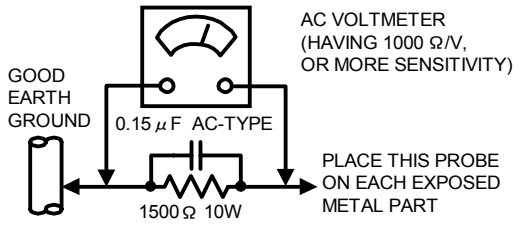
SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**
   The chassis and any sub-chassis contained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. **Isolation Check**
    (Safety for Electrical Shock Hazard)
    After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

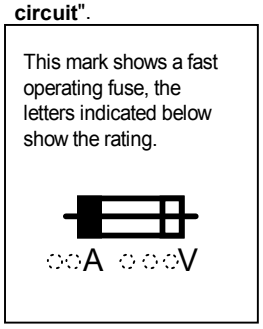
(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

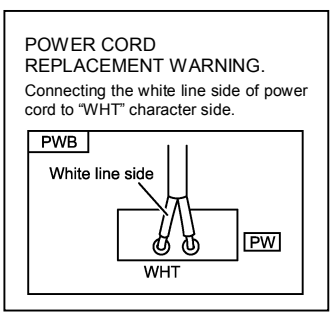
(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

● **Alternate Check Method**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



11. **High voltage hold down circuit check.**
    After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.
    See item "**How to check the high voltage hold down circuit**".

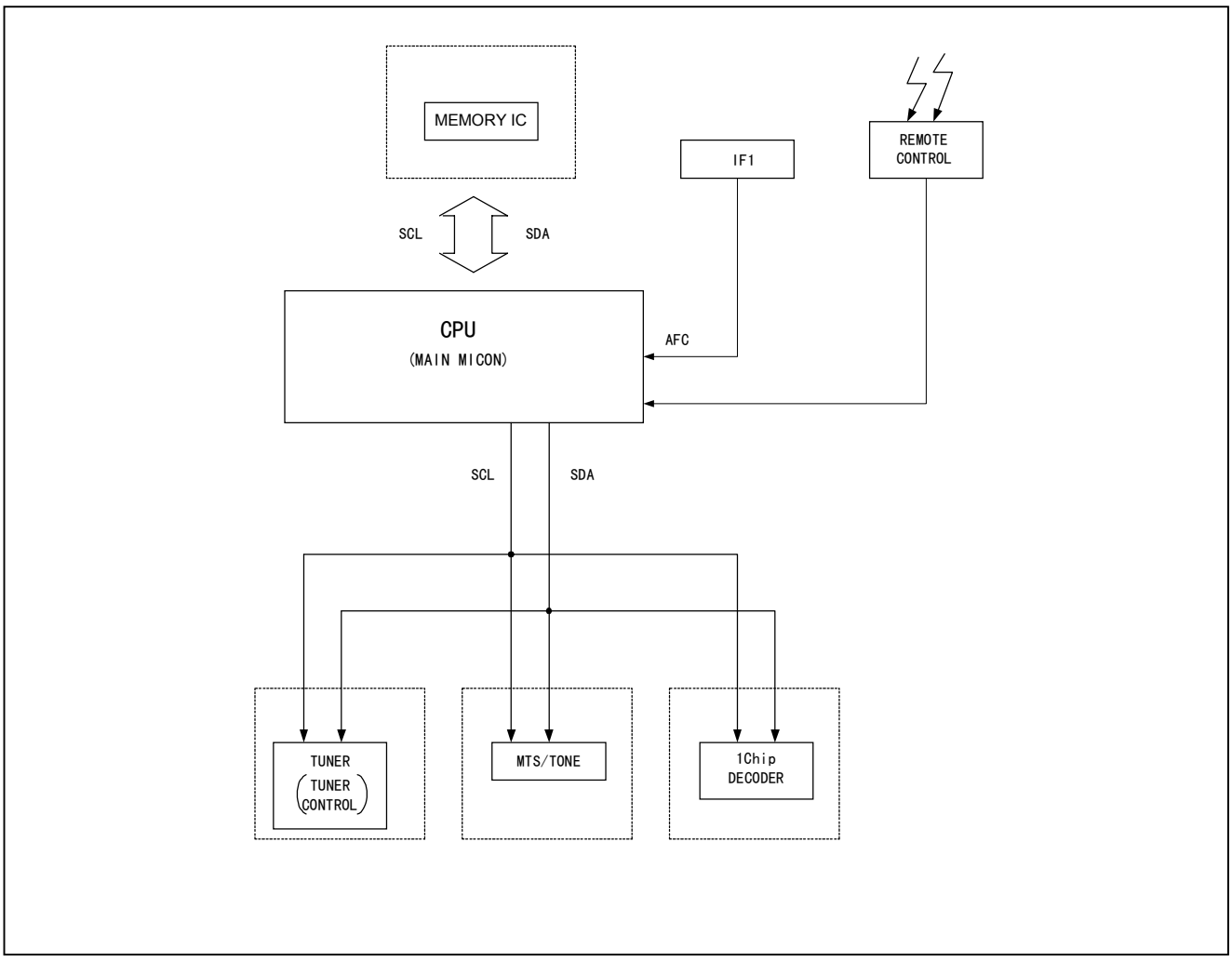




FEATURES

- New chassis design enables use of a single board with simplified circuitry.
- Provided with miniature tuner (TV/CATV).
- Multifunctional remote control permits picture adjustment.
- Adoption of the CHANNEL GUARD function prevents the specific channels from being selected, unless the “ID number” is key in.
- I^2C bus control utilizes single chip ICs.
- Adoption of the VIDEO STATUS function.
- Adoption of the ON/OFF TIMER function.
- Adoption of the HYPER SURROUND function.
- With 75Ω V/U in common (F-Type) ANT Terminal.
- SLEEP TIMER for setting in real time.
- Closed-caption broadcasts can be viewed.
- Audio Video input terminal.
- Variable Audio output terminal.
- Built-in MTS system.

● SYSTEM BLOCK DIAGRAM



MAIN DIFFERENCE LIST

⚠	Model / Parts Name	AV-20320/S	AV-20321/S
	MAIN PWB	SFV-1077A-M2	SFV-1083A-M2
⚠	POWER CORD	QMPD390-200-JS (Within MAIN PWB)	QMPD209-200-JC (Within MAIN PWB)
⚠	FRONT CABINET	LC10109-016A-A	LC10109-017A-A
⚠	POWER KNOB	LC30376-001A-A	LC30376-002A-A
⚠	PUSH KNOB	LC30271-001A-A	LC30271-002A-A
⚠	REAR COVER	LC10108-001E-A	LC10108-003D-A
⚠	POWER CORD CLAMP	LC20106-001D-A	LC20106-002C-A
	REMOTE CONTROL UNIT	RM-C205-1C	RM-C205W-1C
	WHITE MARK	×	GQ40012-001A-A

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Unplug the power supply cord.
2. Remove the 5 screws marked Ⓐ and 2 screws marked Ⓑ as shown in Fig.1.
3. Withdraw the REAR COVER toward you.

[CAUTION]

- When reinstalling the rear cover, carefully push it inward after inserting the MAIN PWB into the rear cover groove.

REMOVING THE MAIN PW BOARD

- After removing the rear cover.

1. Pick this side of the MAIN PWB and raise one slightly, take off the PWB stopper marked Ⓒ from the cabinet bottom.
2. Pull out the MAIN PWB as it is.
   (If necessary, take off the wire clamp and connectors, etc.)

REMOVING THE SPEAKER

- After removing the MAIN PW board.

1. Remove the 2 screws marked Ⓓ .
2. Then you can remove the SPEAKER

CHECKING THE MAIN PW BOARD

1. To check the back side of the MAIN PW Board.
   1) Pull out the MAIN PWB. (Refer to REMOVING THE MAIN PWB).
   2) Erect the chassis vertically so that you can easily check the back side of the MAIN PW Board.

[CAUTION]

- When erecting the MAIN PWB, be careful so that there will be no contacting with other PW Board.
- Before turning on power, make sure that the CRT earth wire and other connectors are properly connected.

WIRE CLAMPING AND CABLE TYING

1. Be sure clamp the wire.
2. Never remove the cable tie used for tying the wires together.
   Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

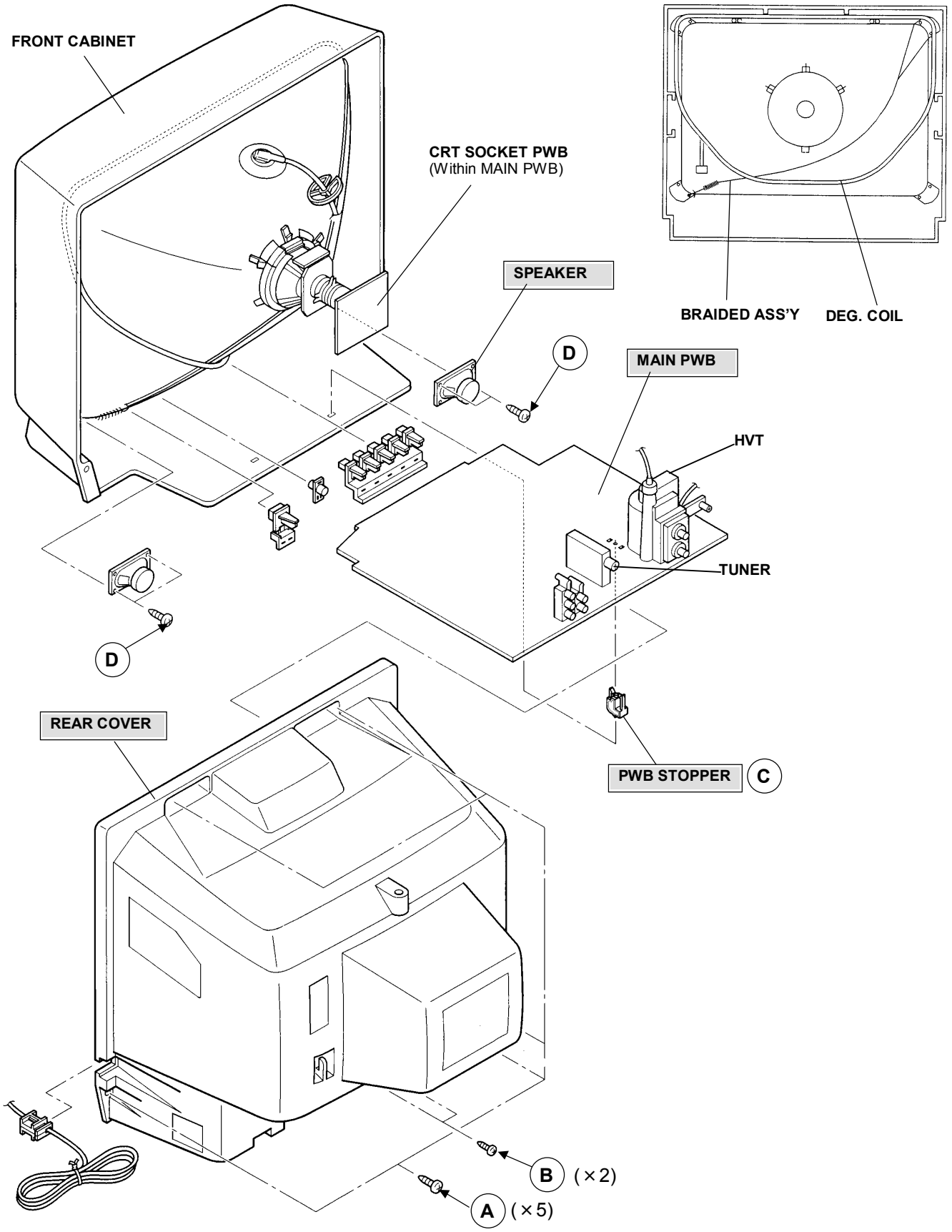

FRONT CABINET
CRT SOCKET PWB
(Within MAIN PWB)
SPEAKER
BRAIDED ASS'Y
DEG. COIL
D
MAIN PWB
HVT
TUNER
D
REAR COVER
PWB STOPPER
C
B
(×2)
A
(×5)

Fig.1

MEMORY IC REPLACEMENT

1. Memory IC

This model use a memory IC.
This memory IC stores data for proper operation of the video and deflection circuits.
When replacing, be sure to use an IC containing this (initial value) data.

2. Memory IC replacement procedure

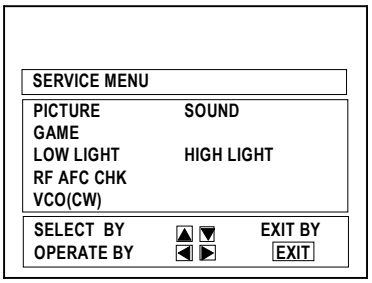
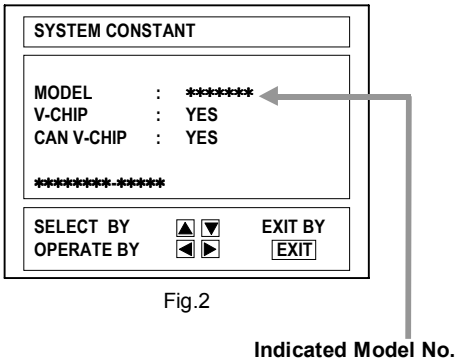
Procedure	Screen display
(1) Power off Switch off the power and disconnect the power cord from the outlet.	
(2) Replace the memory IC Initial value must be entered into the new IC.	
(3) Power on Connect the power cord to the outlet and switch on the power.	
(4) System constant check and setting 1) Press **SLEEP TIMER** key and, while the indication of "**SLEEP TIMER 0 MIN.**" is being displayed, press **DISPLAY** key and **VIDEO STATUS** key on the remote control unit simultaneously. 2) The SERVICE MENU screen of Fig.1 is displayed. 3) While the SERVICE MENU is displayed, again simultaneously press the DISPLAY and VIDEO STATUS keys to display the Fig.2 SYSTEM CONSTANT screen. 4) Refer to the SYSTEM CONSTANT Table1 and check the setting items. Where these differ, select the setting item with the MENU UP/DOWN key and adjust the setting with the MENU LEFT/RIGHT keys. (The letters of the selected item are displayed in yellow.) 5) After adjusting, release the MENU LEFT/RIGHT key to store the setting value. 6) Press the EXIT key twice to return the normal screen.	 Fig.1
(5) Receive channel setting Refer to the OPERATING INSTRUCTIONS(USER'S GUIDE) and set the receive channels (Channels Preset) as described.	
(6) User settings Check the user setting items according to Table 2. Where these do not agree, refer to the OPERATING INSTRUCTIONS (USER'S GUIDE) and set the items as described.	 Fig.2
(7) SERVICE MENU setting Verify what to set in the SERVICE MENU, and set whatever is necessary.(Fig.1) Refer to the SERVICE ADJUSTMENT for setting.	

TABLE 1 (System Constant setting)

Setting item	Setting content	Setting value	
		AV-20320/S	AV-20321/S
MODEL	Display the each application model	Conformable model name	
V-CHIP	YES → NO	YES	←
CAN V-CHIP	YES → NO	YES	←

TABLE 2 (User setting value)

Setting item	Setting value
1. Use remote controller keys	
POWER	OFF
CHANNEL	CH 02
CHANNEL PRESET	See OPERATING INSTRUCTIONS.
VOLUME	10
INPUT (TV/VIDEO)	TV
DISPLAY	OFF
SLEEP TIMER	0
VIDEO STATUS	STANDARD
2. Setting of MENU	
TINT	CENTER
COLOR	CENTER
PICTURE	CENTER
BRIGHT	CENTER
DETAIL	CENTER
BASS	CENTER
TREBLE	CENTER
BALANCE	CENTER
MTS	STEREO
TV SPEAKER	ON
NOISE MUTING	ON
SET VIDEO STATUS	ALL CENTER
SET CLOCK	Unnecessary to set
ON/OFF TIMER	OFF
LANGUAGE	ENG
CLOSED CAPTION	OFF
BACKGROUND	BLACK
AUTO TUNER SETUP	TUNER MODE : AIR
CHANNEL SUMMARY	Unnecessary to set
V-CHIP	OFF
SET LOCK CODE	Unnecessary to set

REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

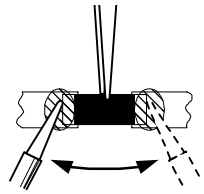
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

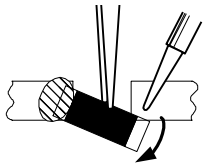
1. How to remove Chip parts

◆ **Resistors, capacitors, etc.**

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

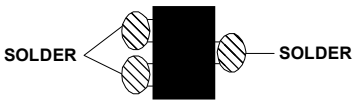


(2) Shift with tweezers and remove the chip part.

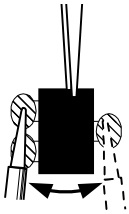


◆ **Transistors, diodes, variable resistors, etc.**

(1) Apply extra solder to each lead.



(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

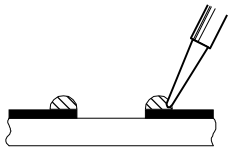


Note : After removing the part, remove remaining solder from the pattern.

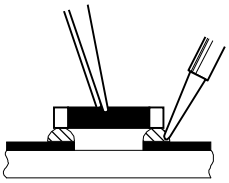
2. How to install Chip parts

◆ **Resistors, capacitors, etc.**

(1) Apply solder to the pattern as indicated in the figure.



(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

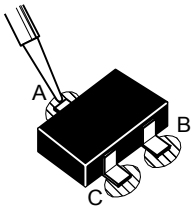


◆ **Transistors, diodes, variable resistors, etc.**

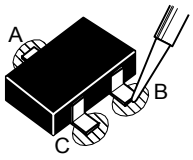
(1) Apply solder to the pattern as indicated in the figure.

(2) Grasp the chip part with tweezers and place it on the solder.

(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



SERVICE ADJUSTMENTS

ADJUSTMENT PREPARATION:

1. **You can make the necessary adjustments for this unit with either the Remote Control Unit or With the adjustment tools and parts as given below.**
2. **Adjustment with the Remote Control Unit is made on the basis of the initial setting values, however, the new setting values which set the screen to its optimum condition may differ from the initial settings.**
3. Make sure that AC power is turned on correctly.
4. Turn on the power for set and test equipment before use, and start the adjustment procedures after waiting at least 30 minutes.
5. Unless otherwise specified, prepare the most suitable reception or input signal for adjustment.
6. Never touch any adjustment parts which are not specified in the list for this adjustment - variable resistors, transformers, condensers, etc.
7. Presetting before adjustment.
   Unless otherwise specified in the adjustment instructions, preset the following functions with the remote control unit:

User mode position

MENU ITEM	PRESET VALUE
VIDEO STATUS	STANDARD
BASS/TREBLE/BALANCE	CENTER
TINT / COLOUR / PICTURE BRIGHT / DETAIL	CENTER
MTS	STERO

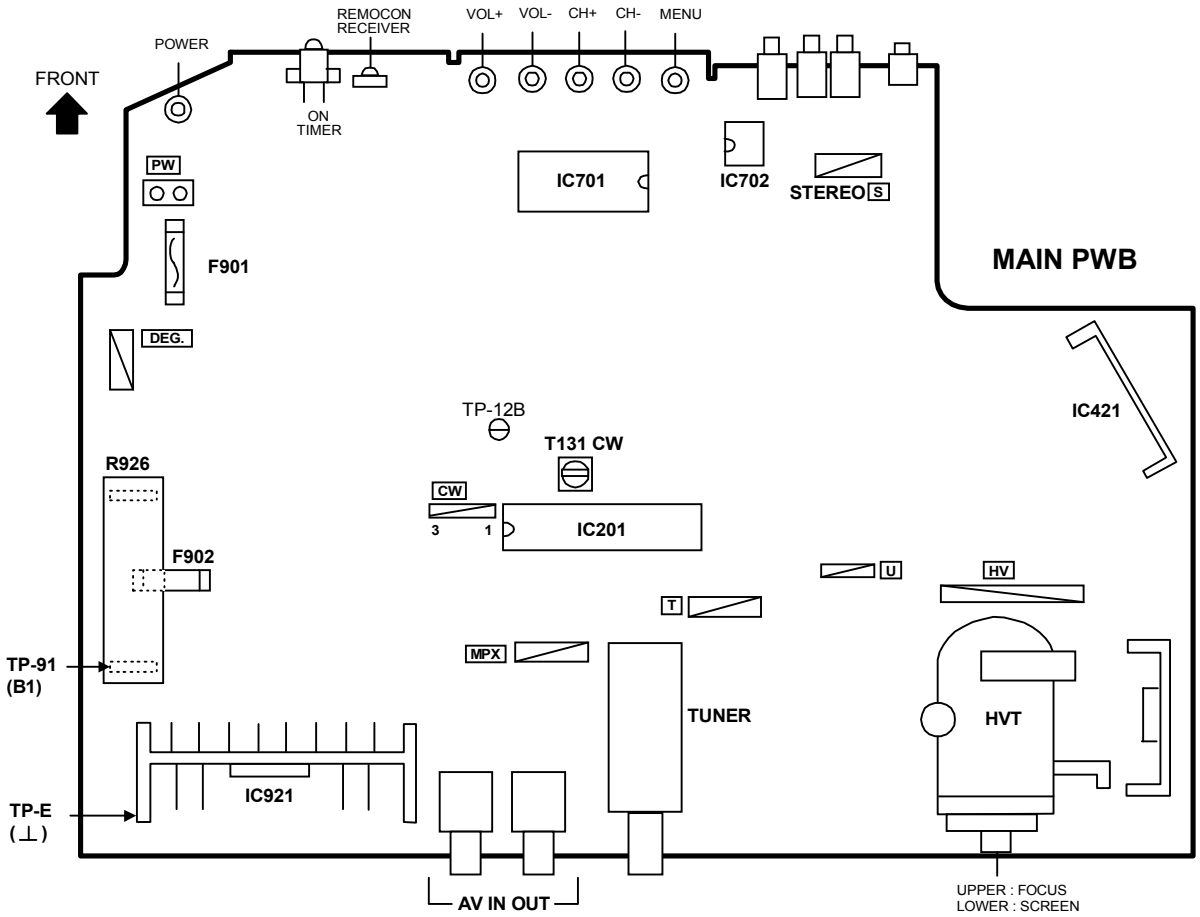
ADJUSTMENT EQUIPMENT

1. DC voltmeter (or digital voltmeter)
2. Oscilloscope
3. Signal generator (Pattern generator) [NTSC]
4. Remote control unit
5. TV audio multiplex signal generator.
6. Frequency counter

ADJUSTMENT ITEMS

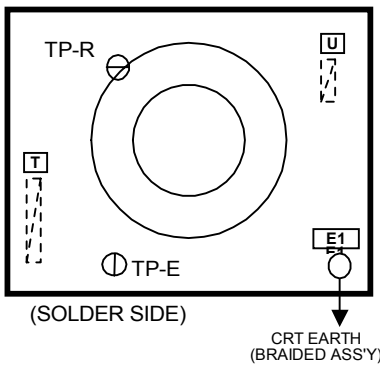
Adjustment item	Adjustment item	Adjustment item
● B1 POWER SUPPLY	● WHITE BALANCE	● MTS CIRCUIT
● VIDEO / DEF. CIRCUIT	Low Light	MTS INPUT LEVEL check
IF VCO	High Light	MTS STEREO VCO
RF. AGC	● PICTURE	MTS SAP VCO
FOCUS	SUB BRIGHT	MTS FILTER check
V. SIZE	SUB CONTRAST	MTS SEPARATION
H. POSITION	MTS COLOR	● PURITY / CONVERGENCE
	SUB TINT	Purity Static / Dynamic convergence

ADJUSTMENT LOCATIONS



CRT SOCKET PWB

(Within MAIN PWB ASS'Y)



BASIC OPERATION SERVICE MENU

1. TOOL OF SERVICE MENU OPERATION

Operate the SERVICE MENU with the REMOTE CONTROL UNIT.

2. SERVICE MENU ITEMS

In general, basic setting(adjustments) items or verifications are performed in the SERVICE MENU.

- PICTURE ····· This sets the setting values (adjustment values) of the VIDEO/CHROMA and DEFLECTION circuits.
- SOUND ····· This sets the setting values (adjustment values) of the AUDIO circuit.
- GAME ····· This is used when the GAME MODE is adjusted.
- LOW LIGHT ····· This sets the setting values (adjustment values) of the WHITE BALANCE circuit.
- HIGH LIGHT ····· This sets the setting values (adjustment values) of the WHITE BALANCE circuit.
- RF AFC CHK ····· This is used when the IF VCO is adjusted. **[Do not adjust]**
- VCO (CW) ····· This is used when the IF VCO is adjusted.

3. Basic Operations of the SERVICE MENU

(1) How to enter the SERVICE MENU.

Press **SLEEP TIMER** key and, while the indication of "**SLEEP TIMER 0 MIN.**" is being displayed, press **DISPLAY** key and **VIDEO STATUS** key on the remote control unit simultaneously to enter the **SERVICE MENU** screen ① shown in the next figure page.

(2) SERVICE MENU screen selection

Press the UP / DOWN key of the MENU to select any of the following items.
(The letters of the selected items are displayed in yellow.)

- PICTURE
- SOUND
- GAME
- LOW LIGHT
- HIGH LIGHT
- RF AFC CHK
- VCO(CW)

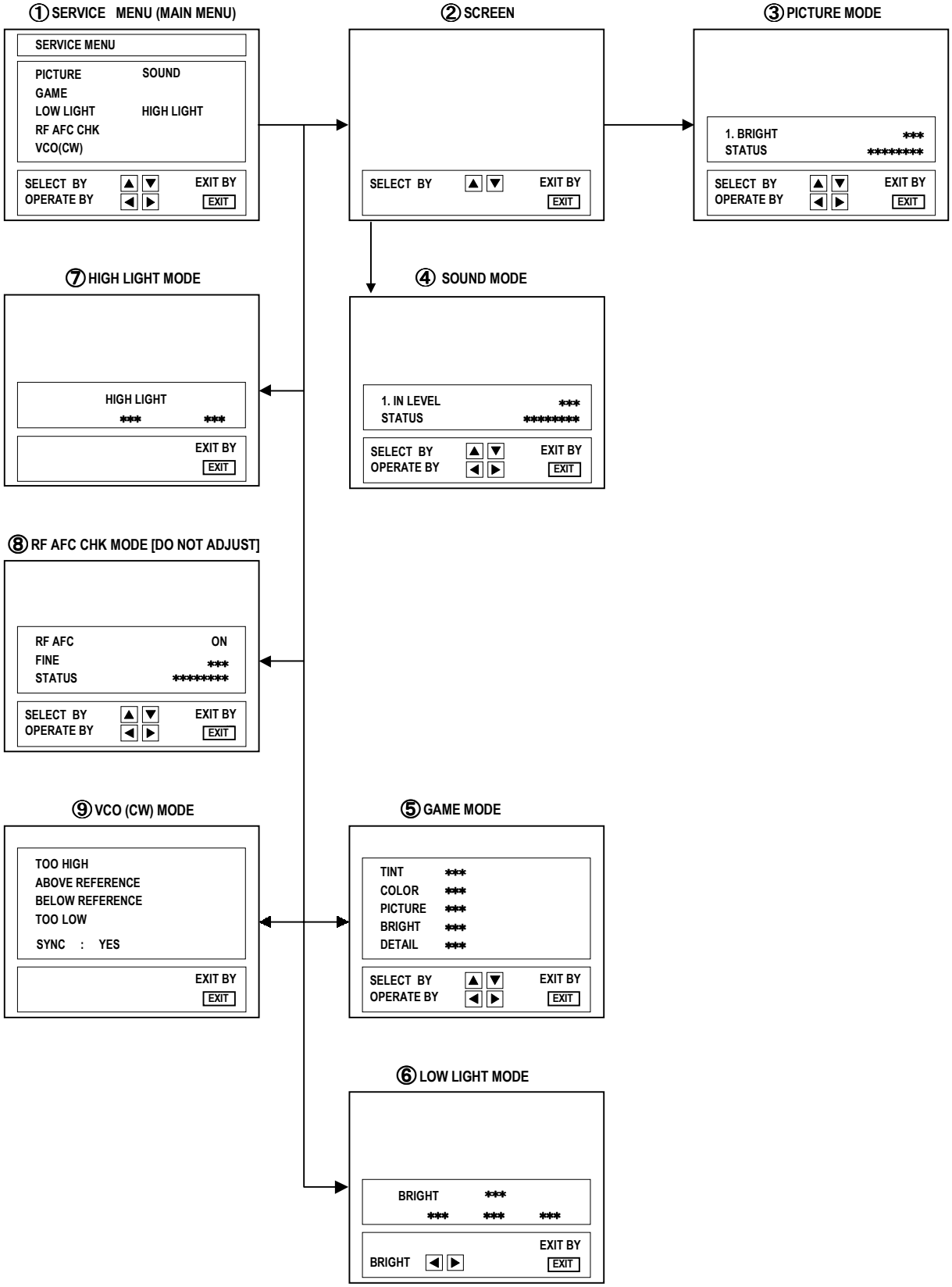
(3) Enter the any setting (adjustment) mode

- **PICTURE and SOUND mode**

1) If select any of PICTURE or SOUND items, and the LEFT / RIGHT key is pressed from SERVICE MENU (MAIN MENU), the screen ② will be displayed as shown in figure page later.
2) Then the UP / DOWN key is pressed, the PICTURE mode screen ③ or the SOUND mode screen ④ is displayed, and the PICTURE or SOUND setting can be performed.

- **GAME, LOW LIGHT, HIGH LIGHT, RF AFC CHK and VCO (CW) mode**

1) If select any of GAME / LOW LIGHT / HIGH LIGHT / RF AFC CHK / VCO (CW) items, and the LEFT / RIGHT key is pressed from SERVICE MENU (MAIN MENU), the screens ⑤ ⑥ ⑦ ⑧ ⑨ will be displayed as shown in figure page later.
2) Then the settings or verifications can be performed.

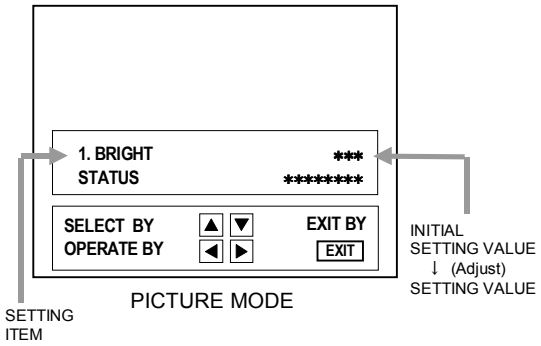

① SERVICE MENU (MAIN MENU)
SERVICE MENU
PICTURE
SOUND
GAME
LOW LIGHT
HIGH LIGHT
RF AFC CHK
VCO(CW)
SELECT BY
OPERATE BY
EXIT BY
EXIT
② SCREEN
SELECT BY
EXIT BY
EXIT
③ PICTURE MODE
1. BRIGHT ***
STATUS ********
SELECT BY
OPERATE BY
EXIT BY
EXIT
④ SOUND MODE
1. IN LEVEL ***
STATUS ********
SELECT BY
OPERATE BY
EXIT BY
EXIT
⑤ GAME MODE
TINT ***
COLOR ***
PICTURE ***
BRIGHT ***
DETAIL ***
SELECT BY
OPERATE BY
EXIT BY
EXIT
⑥ LOW LIGHT MODE
BRIGHT ***
*** *** ***
BRIGHT
EXIT BY
EXIT
⑦ HIGH LIGHT MODE
HIGH LIGHT
*** ***
EXIT BY
EXIT
⑧ RF AFC CHK MODE [DO NOT ADJUST]
RF AFC ON
FINE ***
STATUS ********
SELECT BY
OPERATE BY
EXIT BY
EXIT
⑨ VCO (CW) MODE
TOO HIGH
ABOVE REFERENCE
BELOW REFERENCE
TOO LOW
SYNC : YES
EXIT BY
EXIT

(4) Setting method

1) UP / DOWN key of the MENU
   Select the SETTING ITEM.

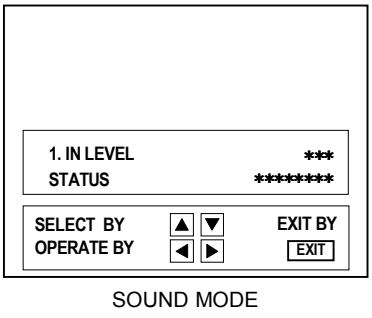
2) LEFT / RIGHT key of the MENU
   Setting(adjust) the INITIAL SETTING VALUE of the SETTING ITEM.
   When the key is released the SETTING VALUE will be stored (memorized).

3) EXIT key
   Returns to the previous screen.



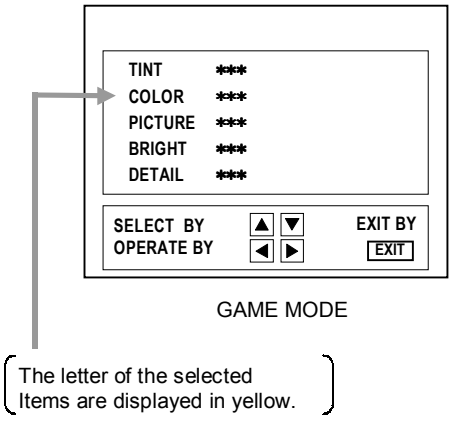
(5) Releasing SERVICE MENU

1) After returning to the SERVICE MENU upon completion of the setting (adjustment) work, press the EXIT key again.



★ **The settings for LOW LIGHT and HIGH LIGHT are described in the WHITE BALANCE page of ADJUSTMENT.**

★ **The setting for VCO(CW) are described in the IF VCO page of ADJUSTMENT.**



INITIAL SETTING VALUE OF SERVICE MENU

1. Adjustment of the SERVICE MENU is made on the basis of the initial setting values; however, the new setting values which set the screen in its optimum condition may differ from the initial setting.
2. Do not change the initial setting values of the setting (Adjustment) items not listed in "ADJUSTMENT".

● PICTURE MODE

✧ The four setting items in the video mode No.7 EXT BRI., No.8 EXT PIC., No.11 EXT TINT and No.12 EXT COL. are linked to the items in the TV MODE No.1 BRIGHT, No.2 PICTURE, No.5 TINT and No.6 COLOR, respectively. When the setting items in the TV mode are adjusted, the values in the setting items in the video mode are revised automatically to the same values in the TV mode.(The initial setting values given in ( ) are off-set values.)

✧ When the four items (No.7, 8, 11 and 12) are adjusted in the video mode, the setting values in each item are revised independently.

No.	Setting (Adjustment) items	Variable range	Initial setting value	
			AV-20320/S	AV-20321/S
1.	BRIGHT	0 ～ 127	64	64
2.	PICTURE	0 ～ 127	95	95
3.	TV DTL(TV DETAIL)	0 ～ 63	26	26
4.	TV BPF(TV B.P.FILTER)	0 / 1	0	0
5.	TINT	0 ～ 127	70	70
6.	COLOR	0 ～ 127	48	48
7.	EXT BRI.(EXT.BRIGHT)	±25	(-1)	(±0)
8.	EXT PIC.(EXT.PICTURE)	±25	(±0)	(±0)
9.	EXT DTL(EXT.DETAIL)	0 ～ 63	26	26
10.	EXT BPF(EXT.B.P.FILTER)	0 / 1	0	0
11.	EXT TINT	±25	(±0)	(+1)
12.	EXT COL.(EXT.COLOR)	±25	(±0)	(+3)
13.	V SIZE	0 ～ 63	38	38
14.	V CENT.(V.CENTER)	0 ～ 7	0	0
15.	H POS.(H.POSITION)	0 ～ 31	20	20
16.	OSD HP (OSD H POSITION)	0 ～ 31	26	26
17.	OSD VP (OSD V POSITION)	0 ～ 15	14	14
18.	H. AFC	0 / 1	0	0
19.	RF AGC	0 ～ 63	40	40
20.	OSC SEL	0 / 1	0	0

● SOUND MODE

No.	Setting (Adjustment) item	Variable range	Initial setting value
1.	**IN LEVEL (INPUT LEVEL)**	**0～63**	**14**
2.	**FH MON. (FM MONITOR)**	**0 / 1**	**0**
3.	**ST VCO (STEREO VCO)**	**0～63**	**38**
4.	**PILOT (PILOT CANCELER)**	**0 / 1**	**0**
5.	**FILTER**	**0～63**	**35**
6.	**LOW SEP. (LOW SEPARATION)**	**0～63**	**10**
7.	**HI SEP. (HI SEPARATION)**	**0～63**	**9**
8.	**5FH MON. (5FH MONITOR)**	**0 / 1**	**0**
9.	**SAP VCO**	**0～63**	**40**
10.	**FIL. OFF.**	**±10**	**0**

● GAME MODE

No.	Setting (Adjustment) item	Variable range	Initial setting value
1.	TINT	±20	±0
2.	COLOR	±20	±0
3.	PICTURE	±20	-10
4.	BRIGHT	±20	-5
5.	DETAIL	±15	+5

● LOW LIGHT MODE

No.	Setting (Adjustment) item	Variable range	initial setting value
1.	R CUTOFF	0 ～ 255	20
2.	G CUTOFF	0 ～ 255	20
3.	B CUTOFF	0 ～ 255	20

● HIGH LIGHT MODE

No.	Setting (Adjustment) item	Variable range	initial setting value
1.	G DRIVE	0 ～ 255	128
2.	B DRIVE	0 ～ 255	128

● RF AFC CHK MODE

No.	Setting (Adjustment) item	Variable range	initial setting value
1.	RF AFC	ON / OFF	ON
2.	FINE	-77 ～ +77	± * * *

DO NOT ADJUST

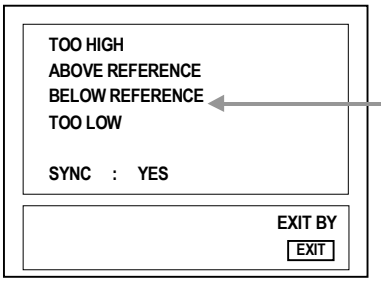
ADJUSTMENTS

●B1 POWER SUPPLY

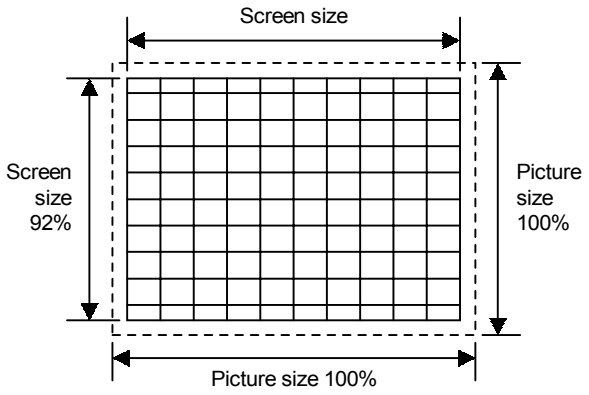
Item	Measuring instrument	Test point	Adjustment part	Description
Check of B1 POWER SUPPLY	**DC Voltmeter**	**TP-91 (B1)** **TP-E(⊥)**		1. Receive a black-and-white signal. 2. Connect the DC Voltmeter to TP-91 (B1) and TP-E(⊥)(See the page of Adjustment Locations) 3. Confirm that the voltage is DC134V $^{+2V}_{-2.5V.}$

●ADJUSTMENT OF VIDEO / DEF. CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
IF VCO adjustment	**Signal generator**		**CW TRANSF. (T131)** **[VCO(CW)] MODE**	● Under normal conditions, no adjustment is required. 1. Receive a NTSC broadcast. (use channels without offset frequency). 2. Select the VCO(CW) mode from the SERVICE MENU. 3. Confirm the color change (yellow) from "TOO HIGH" to "TOO LOW" by CW TRANSF. and "SYNC : YES" being shown on the screen. Then, adjust CW TRANSF. until "BELOW REFERENCE" mark turns yellow and confirm again " SYNC : YES" being shown on the screen.
RF. AGC adjustment			**No.19 RF AGC**	1. Receive a broadcast. 2. Select "No.19 RF AGC" of the PICTURE MODE. 3. Press the MUTE key and turn off color. 4. With the MENU LEFT key, get noise in the screen picture. (0 side of setting value) 5. Press the MENU RIGHT key and stop when noise disappears from the screen. 6. Change to other channels and make sure that there Is no irregularity. 7. Press the MUTE key and get color out.
FOCUS adjustment	**Signal generator**		**FOCUS VR** **[In HVT]**	1. Receive a crosshatch signal. 2. While looking at the screen, adjust FOCUS VR so that the vertical and horizontal lines will be clear and in fine detail. 3. Make sure that the picture is in focus even when the screen gets darkened.



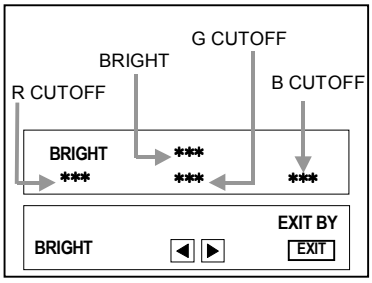
Item	Measuring instruments	Test point	Adjustment part	Description
V.SIZE Adjustment	**Signal generator**		**No.13 V.SIZE**	1. Receive a crosshatch signal. 2. Select No.13 V SIZE in the PICTURE MODE. 3. Set the initial setting value of No.13 V SIZE with the LEFT / RIGHT key of the MENU. 4. Adjust No.13 V SIZE until the vertical screen size is 92%.
H.POSITION Adjustment	**Signal generator**		**No.15 H POS.**	1. Receive a crosshatch signal. 2. Select the No.15 H POS. of the PICTURE MODE. 3. Set the initial setting value of the No.15 H POS. with the LEFT / RIGHT key of the MENU. 4. Adjust the No.15 H POS. until the screen will be horizontally centered.

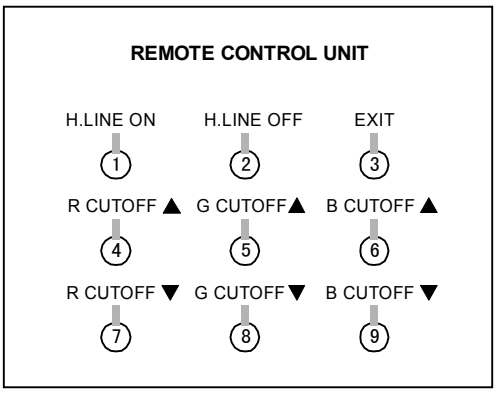


● ADJUSTMENT OF WHITE BALANCE

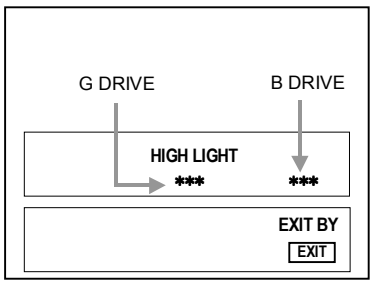
Item	Measuring instruments	Test point	Adjustment part	Description
WHITE BALANCE (Low Light) Adjustment	**Signal generator**		**BRIGHT** **R. CUTOFF** **G. CUTOFF** **B. CUTOFF** **SCREEN VR** **[In HVT]**	1. Receive a black-and-white signal.(Color off) 1. Select the【LOW LIGHT】MODE from the SERVICE MENU. 3. Set the initial setting value of BRIGHT with the LEFT / RIGHT key of the remote control unit. 4. Set the initial setting value of R CUTOFF, G CUTOFF and B CUTOFF with the ④ to ⑨ key of the remote control unit. 5. Display a single horizontal line by pressing the ①key of the remote control unit. 6. Turn the screen VR all the way to the left. 7. Turn the screen VR gradually to the right from the left until either one of the red, blue or green colors appears faintly. 8. Adjust the two colors which did not appear until the single horizontal line that is displayed becomes white using the ④ to ⑨ keys of the remote control unit. 9. Turn the screen VR to where the single horizontal line glows faintly. 10. Press the ② key to return to the regular screen. ∗ The ③ EXIT key is the cancel key for the WHITE BALANCE.
WHITE BALANCE (High Light) Adjustment	**Signal generator**		**G. DRIVE** **B. DRIVE**	1. Receive a black-and-white signal. (Color off) 2. Select the【HIGH LIGHT】MODE in the SERVICE MENU. 3. Set the initial setting value of G DRIVE and B DRIVE with the ⑤, ⑥, ⑧ and ⑨ keys of the remote control unit. 4. Adjust the screen until it becomes white using the ⑤, ⑥, ⑧ and ⑨ keys of the remote control unit. ∗ The ③ (EXIT) key is the cancel key for the WHITE BALANCE.

[LOW LIGHT] MODE





[HIGH LIGHT] MODE



Remote Control Unit

① key : H.LINE ON
② key : H.LINE OFF
③ key : EXIT
⑤ key : G DRIVE ▲
⑥ key : B DRIVE ▲
⑧ key : G DRIVE ▼
⑨ key : B DRIVE ▼

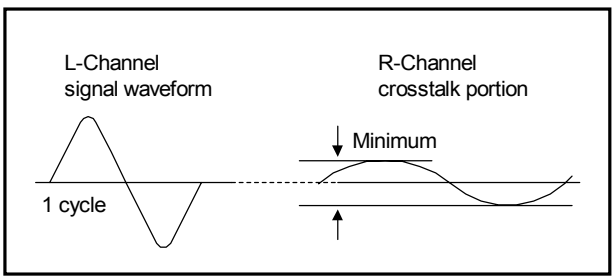
● ADJUSTMENT OF PICTURE

Item	Measuring instruments	Test point	Adjustment part	Description
SUB BRIGHT Adjustment			**No.1 BRIGHT**	1. Receive a broadcast. 2. Select No.1 BRIGHT of the PICTURE MODE. 3. Set the initial setting value of the No.1 BRIGHT with the LEFT / RIGHT key of the MENU. 4. If the brightness is not best with the initial setting value, make fine adjustment of the No.1 BRIGHT until you get the optimum brightness.
SUB CONTRAST Adjustment			**No.2 PICTURE**	1. Receive a broadcast. 2. Select No.2 PICTURE of the PICTURE MODE. 3. Set the initial setting value of the No.2 PICTURE with the LEFT / RIGHT key of the MENU. 4. If the contrast is not best with the initial setting value, make fine adjustment of the No.2 PICTURE until you get the optimum contrast.
SUB COLOR Adjustment			**No.6 COLOR**	1. Receive a broadcast. 2. Select No.6 COLOR of the PICTURE MODE. 3. Set the initial setting value of the No.6 COLOR with the LEFT / RIGHT key of the MENU. 4. If the color is not best with the initial setting value, make fine adjustment of the No.6 COLOR until you get the optimum color.
SUB TINT Adjustment			**No.5 TINT**	1. Receive a broadcast. 2. Select No.5 TINT of the PICTURE MODE. 3. Set the initial setting value of the No.5 TINT with the LEFT / RIGHT key of the MENU. 4. If the tint is not best with the initial setting value, make fine adjustment of the No.5 TINT until you get the optimum tint.

● ADJUSTMENT OF MTS CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
MTS INPUT LEVEL check			**No.1 IN LEVEL**	1. Select the “No.1 IN LEVEL” of the SOUND MODE. 2. Verify that the “No.1 IN LEVEL” is set at its initial setting value.
MTS STEREO VCO adjustment	**Signal generator** **Frequency counter**	**R OUT [AUDIO OUT]**	**No.2 FH MON.** **No.3 ST VCO**	1. Receive a RF signal (nonmodulated sound signal) from the antenna terminal. 2. Select the “No.2 FH MON.” of SOUND MODE, and change the setting value from 0 to 1. 3. Connect the Frequency Counter to R OUT RCA pin of the AUDIO OUT. 4. Select the “No.3 ST VCO”. 5. Set the initial setting value of the “No.3 ST VCO” with the LEFT/RIGHT key of the menu. 6. Adjust the “No.3 ST VCO” so that the Frequency Counter will display 15.73kHz±0.1kHz. 7. Select the “No.2 FH MON.” of the SOUND MODE, and reset the setting value from 1 to 0.

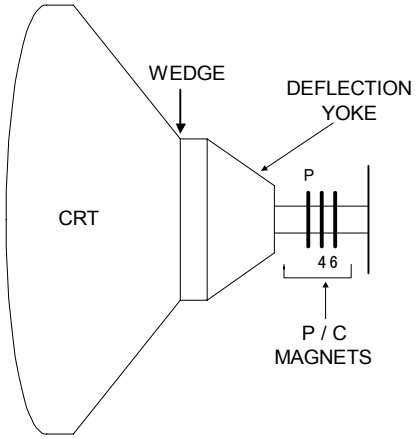
Item	Measuring instrument	Test point	Adjustment part	Description
MTS SAP VCO adjustment	**Signal generator** **Frequency counter**	**【MPX】 Connector** **【4】pin SDA** **【3】pin GND** **R OUT [AUDIO OUT]**	**No.8 5FH MON.** **No.9 SAP VCO**	1. Receive a RF signal (non modulated sound signal) from the antenna terminal. 2. Connect between pin【4】of【MPX】connector and GND (Pin【3】of【MPX】connector) through 1MΩ Resistor. 3. Select the “No.8 5FH MON.” of the SOUND MODE, and reset the setting value from 0 to 1. 4. Connect the Frequency Counter to R out RCA pin of the AUDIO OUT. 5. Select the “No.9 SAP VCO”. 6. Set the initial setting value of “No.9 SAP VCO” with the LEFT/RIGHT key of the menu. 7. Adjust the “No.9 SAP VCO” so that the Frequency Counter will display 78.67kHz±0.5kHz. 8. Select the “No.8 5FH MON.” of the SOUND MODE, and reset the setting value from 1 to 0.
MTS FILTER check			**No.5 FILTER**	1. Select the “No.5 FILTER” of the SOUND MODE. 2. Verify that the “No.5 FILTER” is set at its initial setting value.
MTS SEPARATION adjustment	**TV audio multiplex signal generator** **Oscilloscope**	**L OUT** **R OUT [AUDIO OUT]**	**No.6 LOW SEP.** **No.7 HI SEP.**	1. Input a stereo L signal (300Hz) from the TV audio multiplex signal generator to the antenna terminal. 2. Connect an oscilloscope to L OUT RCA pin of the AUDIO OUT, and display one cycle portion of the 300Hz signal. 3. Change the connection of the oscilloscope to R OUT RCA pin of the AUDIO OUT, and enlarge the voltage axis. 4. Select the “No.6 LOW SEP.” of the SOUND MODE. 5. Set the initial setting value of the “No.6 LOW SEP.” with the LEFT/RIGHT key of the menu. 6. Adjust the “No.6 LOW SEP.” so that the stroke element of the 300Hz signal will become minimum. 7. Change the signal to 3kHz, and similarly adjust the “No.7 HI SEP.”.



ADJUSTMENT OF PURITY / CONVERGENCE

PURITY ADJUSTMENT

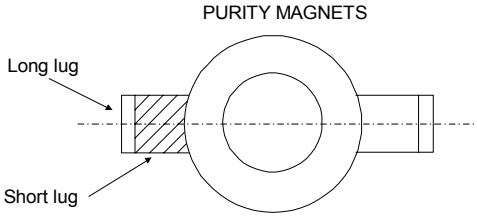
1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedges.
4. Input a green raster signal from the signal generator, and turn the screen to green raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig.2)
7. Adjust the gap between two lugs so that the GREEN RASTER will come into the center of the screen. (Fig.3)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a crosshatch signal.
11. Verify that the screen is horizontal.
12. Input red and blue raster signals, and make sure that purity is properly adjusted.



• P/C MAGNETS

P : PURITY MAGNET
4 : 4 POLES (convergence magnets)
6 : 6 POLES (convergence magnets)

Fig.1



Bring the long lug over the short lug and position them horizontally.

Fig.2

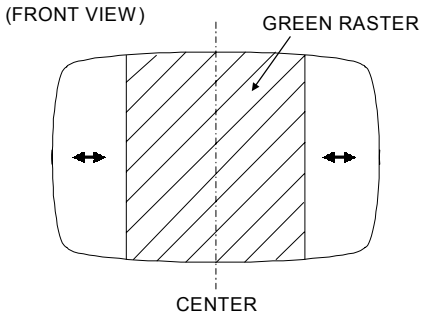


Fig.3

STATIC CONVERGENCE ADJUSTMENT

1. Input a crosshatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen (Fig.1) and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta(red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

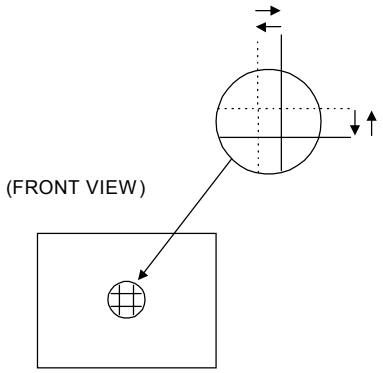


Fig.1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

(FRONT VIEW)

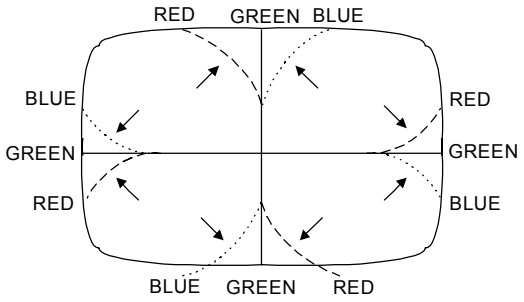


Fig.2

- After adjustment, fix the wedge at the original position.
  Fasten the retainer screw of the deflection yoke.
  Fix the 6 magnets with glue.

(FRONT VIEW)

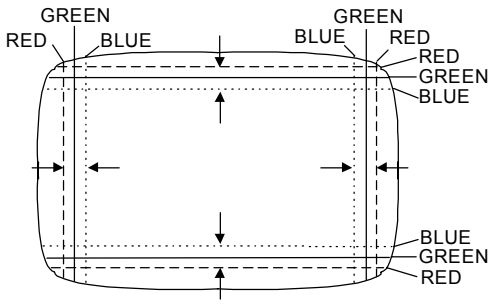


Fig.3

HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. HIGH VOLTAGE HOLD DOWN CIRCUIT

After repairing the high voltage hold down circuit shown in Fig. 1.
This circuit shall be checked to operate correctly.

2. CHECKING OF THE HIGH VOLTAGE HOLD DOWN CIRCUIT

(1) Turn the POWER SW ON.

(2) As shown in Fig. 1, set the resistor (between [X] connector [1] & [3]).

(3) Make sure that the screen picture disappears.

(4) Temporarily unplug the power cord.

(5) Remove the resistor (between [X] connector [1] & [3]).

(6) Again plug the power cord, make sure that the normal picture is displayed on the screen.

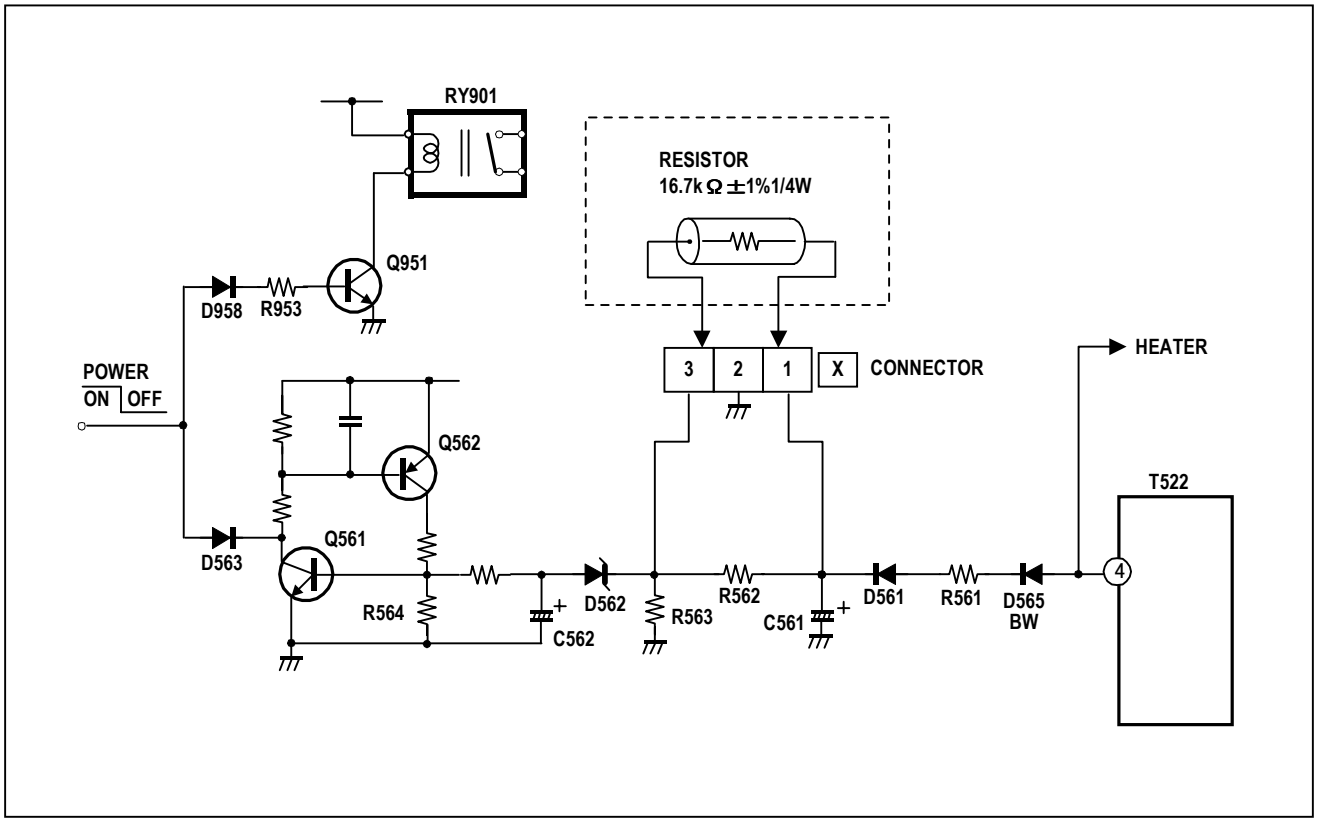


Fig. 1

SELF CHECK FUNCTIONS

1. Outline

This model has self check functions given below. When a malfunction has been detected, the POWER is turned off and the LED flashes to inform of the failure . The malfunction is detected by the signal input state of the control line connected to the microcomputer.

2. Self check items

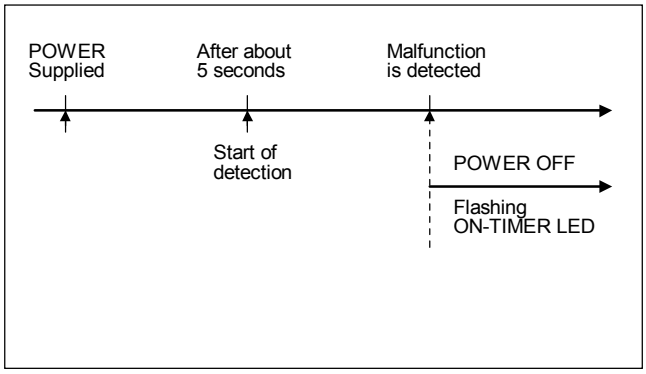
Check item	Details of detection	Method of detection	State of malfunction
CRT NECK protector (Also detected if the power supply line output from the HVT (High voltage Transformer) has shorted with the ground.)	When the vertical circuit S-correction capacitor C427 is shorted, detect the potential drop of the C427, and prevent the burn damage to the CRT NECK. (Grounding of shorting of the power supply output from the HVT to the vertical circuit, and the small signal power supply is also detected.)	The microcomputer detects at 1 second intervals. If NG is detected for more than 1 ms, a malfunction is interpreted.	When a malfunction has been detected, the POWER is turned off. While the POWER is being turned off , the power key of the remote controller is not operational until the power code is taken out and put in again.

3. Self check indicating function

The self-check function begins detection about 5 seconds after power is supplied.

In the event a malfunction is detected, the power is cut off immediately.

At this time, the ON-TIMER LED flashes to inform of the malfunction.



[ON-TIMER LED indication]

The ON-TIMER LED flashes at 0.5 seconds intervals.

AV-20320
AV-20321

JVC

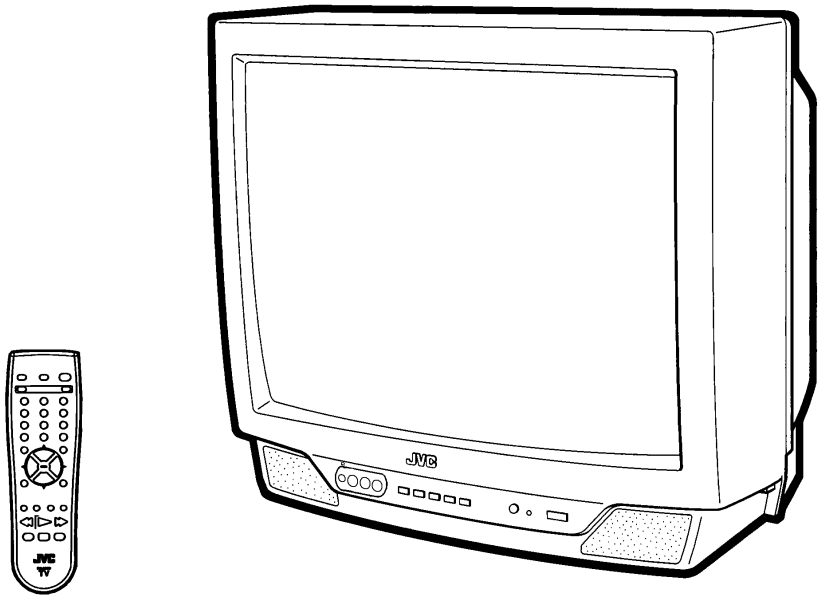
SCHEMATIC DIAGRAMS

COLOR TELEVISION

AV-20320/S
AV-20321/S

BASIC CHASSIS
FV5

CD-ROM No.SML200203



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No.51964
Mar. 2002

CHANNEL CHART (CA)

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISP.	TUNER BAND
○	○	VL	02 03 04 05 06		Ⅰ
		VH	07 08 09 10 11 12 13		Ⅱ
×	○	MID	A B C D E F G H I	14 15 16 17 18 19 20 21 22	
		SUPER	J K L M N O	23 24 25 26 27 28	
			P Q R S T U V W	29 30 31 32 33 34 35 36	Ⅲ
		HYPER	W+1 W+2 W+3 W+4 W+5 W+6 W+7 W+8 W+9 W+10 W+11 W+12 W+13 W+14 W+15 W+16 W+17 W+18 W+19 W+20 W+21 W+22 W+23 W+24 W+25 W+26 W+27 W+28	37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64	
			W+29	65	
		ULTRA	W+30 W+31 W+32 W+33 W+34	66 67 68 69 70	Ⅳ

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISP.	TUNER BAND
×	○	ULTRA	W+35 W+36 W+37 W+38 W+39 W+40 W+41 W+42 W+43 W+44 W+45 W+46 W+47 W+48 W+49 W+50 W+51 W+52 W+53 W+54 W+55 W+56 W+57 W+58 W+59 W+60 W+61 W+62 W+63 W+64 W+65 W+66 W+67 W+68 W+69 W+70 W+71 W+72 W+73 W+74 W+75 W+76 W+77 W+78 W+79 W+80 W+81 W+82 W+83 W+84	71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125	Ⅳ
		SUB MID	A-8 A-4	01 96	Ⅰ
			A-3 A-2 A-1	97 98 99	Ⅱ
○	×	UHF	14 ≀ 69		Ⅳ

TOTAL 180CH
{ VHF 124CH
{ UHF 56CH

NOTE:
TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES.
SPECIAL ADAPTERS MAY BE REQUIRED.

AV-20320
AV-20321

AV-20320/S ,AV-20321/S
STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The components identified by the⚠symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal : Color bar signal

(2)Setting positions of each knob/button and variable resistor : Original setting position when shipped

(3)Internal resistance of tester :DC 20kΩ/V

(4)Oscilloscope sweeping time :H ⇒ 20μS/div
:V ⇒ 5mS/div
:Others ⇒ Sweeping time is specified

(5)Voltage values :All DC voltage values

∗ Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL [EXAMPLE]

● In the PW board :R1209 → R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

● Resistance value

No unit	:[Ω]
K	:[K Ω]
M	:[M Ω]

● Rated allowable power

No indication	:1/ 16 [W]
Others	:As specified

● Type

No indication	:Carbon resistor
OMR	:Oxide metal film resistor
MFR	:Metal film resistor
MPR	:Metal plate resistor
UNFR	:Uninflammable resistor
FR	:Fusible resistor

∗ Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

● Capacitance value

1 or higher	:[pF]
less than 1	:[μF]

● Withstand voltage

No indication	:DC50[V]
Others	:DC withstand voltage [V]
AC indicated	:AC withstand voltage [V]

∗ Electrolytic Capacitors
47/50[Example]:Capacitance value [μF]/withstand voltage[V]

● Type

No indication	:Ceramic capacitor
MM	:Metalized mylar capacitor
PP	:Polypropylene capacitor
MPP	:Metalized polypropylene capacitor
MF	:Metalized film capacitor
TF	:Thin film capacitor
BP	:Bipolar electrolytic capacitor
TAN	:Tantalum capacitor

(3)Coils

No unit	:[μH]
Others	:As specified

(4)Power Supply

:B1 :B2 (12V)
:9V :5V

∗ Respective voltage values are indicated

(5)Test point

:Test point :Only test point display

(6)Connecting method

:Connector :Wrapping or soldering
:Receptacle

(7)Ground symbol

:LIVE side ground
:ISOLATED(NEUTRAL) side ground
:EARTH ground
:DIGITAL ground

5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND and the ISOLATED(NEUTRAL) : (⏚) side GND.Therefore, care must be taken for the following points.

(1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

(2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected , a fuse or any parts will be broken.

◇ **Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.**

NOTE

◇ **Due improvement in performance, some part numbers show in the circuit diagram may not agree with those indicated in the part list.**
When ordering parts, please use the numbers that appear in the Parts List.

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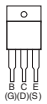
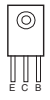
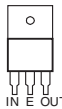
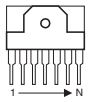
SEMICONDUCTOR SHAPES

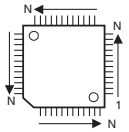
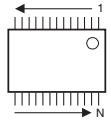
TRANSISTOR

BOTTOM VIEW	FRONT VIEW				TOP VIEW
					CHIP TR

IC

BOTTOM VIEW	FRONT VIEW			TOP VIEW
				

CHIP IC

TOP VIEW		
		

CHANNEL CHART (US)

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISP.	TUNER BAND
○	○	VL	02		Ⅰ
			03		
			04		
			05		
			06		
		VH	07		Ⅱ
			08		
			09		
			10		
			11		
			12		
			13		
×	○	MID	A	14	Ⅰ
			B	15	
			C	16	Ⅱ
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		SUPER	J	23	
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			P	29	
			Q	30	
			R	31	
			S	32	
			T	33	
			U	34	
			V	35	
			W	36	
		HYPER	W+1	37	
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	Ⅳ
			W+13	49	
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
			W+21	57	
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
		ULTRA	W+29	65	
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	

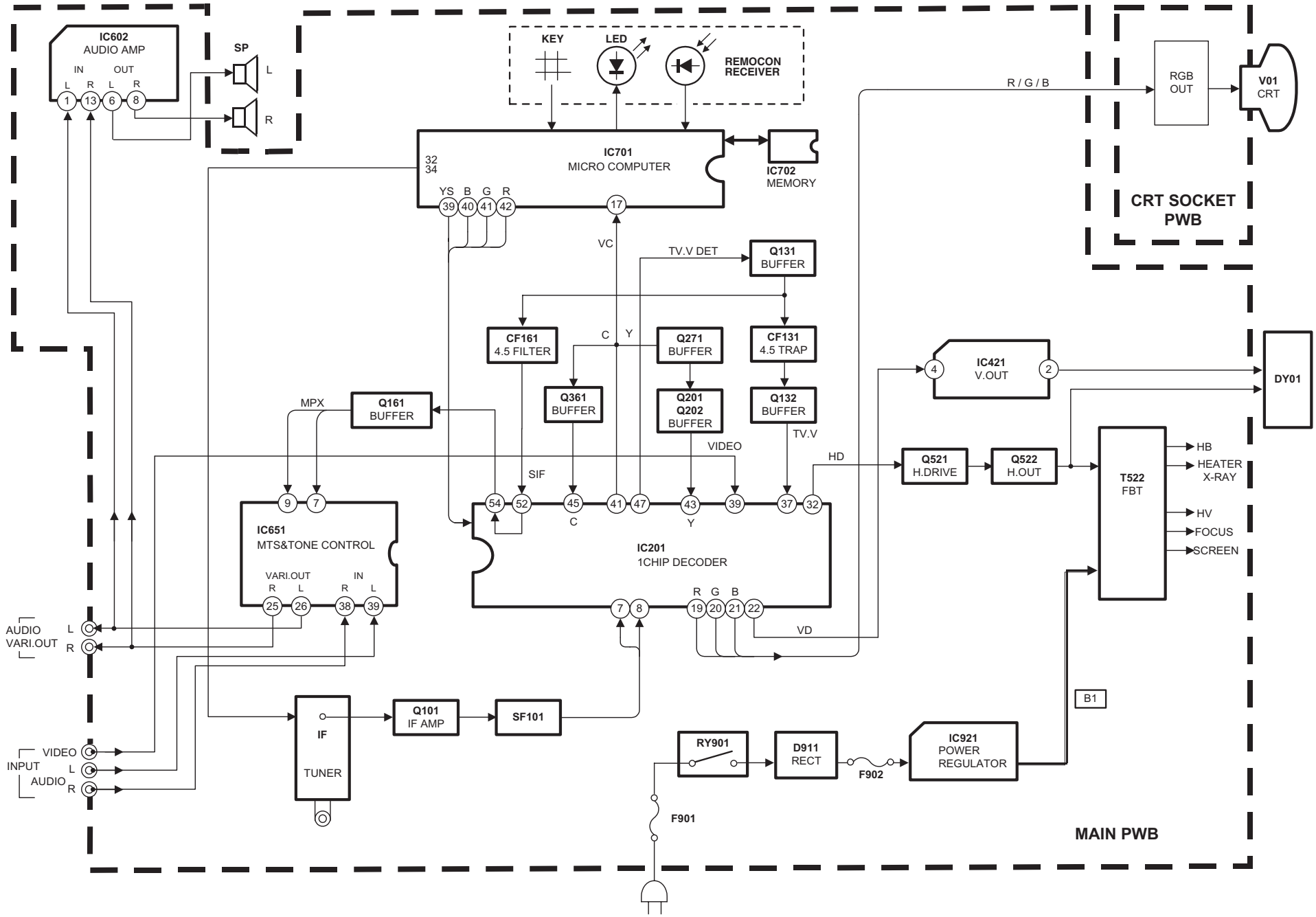
MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISP.	TUNER BAND
×	○	ULTRA	W+35	71	Ⅳ
			W+36	72	
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
			W+41	77	
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
			W+47	83	
			W+48	84	
			W+49	85	
			W+50	86	
			W+51	87	
			W+52	88	
			W+53	89	
			W+54	90	
			W+55	91	
			W+56	92	
			W+57	93	
			W+58	94	
			W+59	100	
			W+60	101	
			W+61	102	
			W+62	103	
			W+63	104	
			W+64	105	
			W+65	106	
			W+66	107	
			W+67	108	
			W+68	109	
			W+69	110	
			W+70	111	
			W+71	112	
			W+72	113	
			W+73	114	
			W+74	115	
			W+75	116	
			W+76	117	
			W+77	118	
			W+78	119	
			W+79	120	
			W+80	121	
			W+81	122	
			W+82	123	
			W+83	124	
			W+84	125	
		SUB MID	A-8	01	Ⅰ
			A-4	96	
			A-3	97	
			A-2	98	
			A-1	99	
○	×	UHF	14 ∫ 69		Ⅳ

TOTAL 180CH
{ VHF 124CH
{ UHF 56CH

NOTE:
TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES.
SPECIAL ADAPTERS MAY BE REQUIRED.

AV-20320
AV-20321

BLOCK DIAGRAM

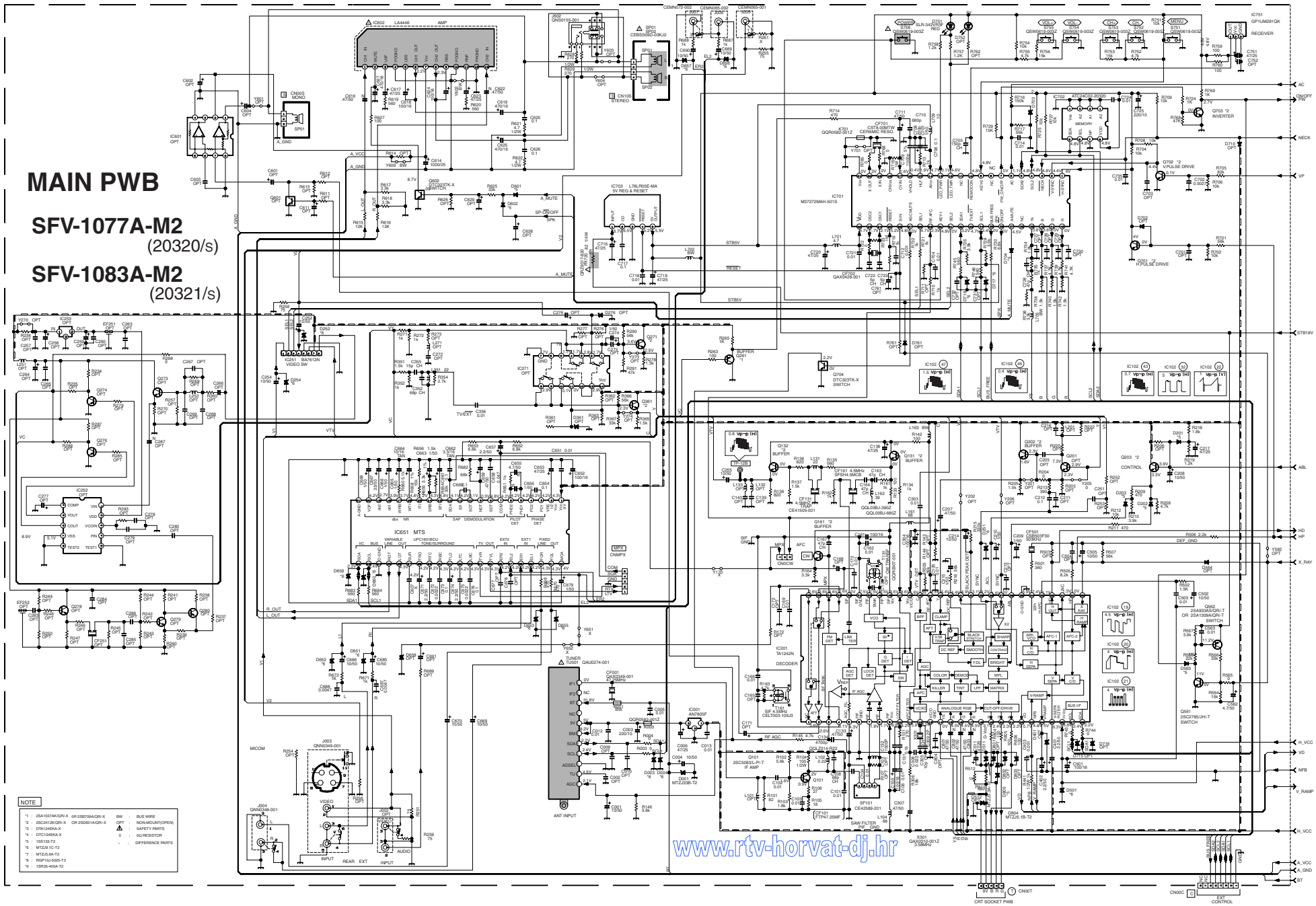


CIRCUIT DIAGRAMS *MAIN PWB CIRCUIT DIAGRAMS*

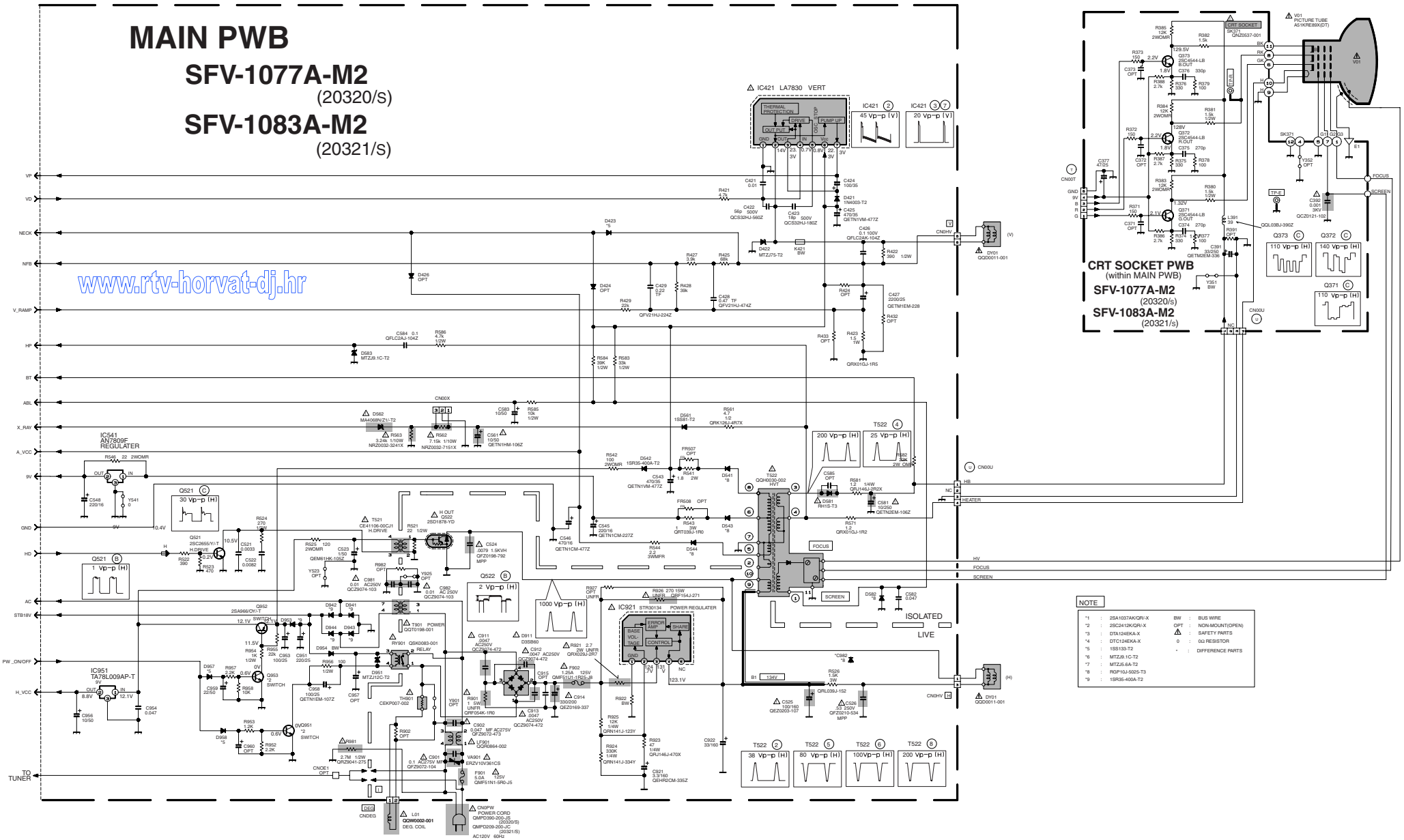
MAIN PWB

SFV-1077A-M2
(20320/s)

SFV-1083A-M2
(20321/s)

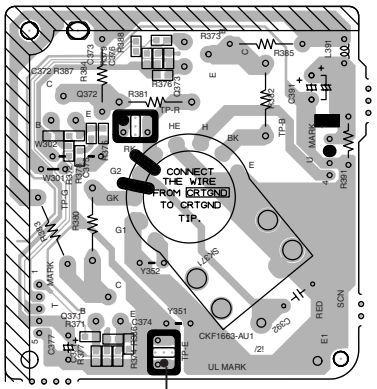

IC802 LA4446 AMP
IC601
IC701 M37272MAH-501S
IC703 L78LR05E-MA 5V REG & RESET
IC704 DTC323TK-X SWITCH
IC705 QAX0428-001
IC702 ATC24C02-20320
IC251 BA7612N VIDEO SW
IC271
IC252
IC651 MTS
IC201 TA1242N DECODER
IC001 AN7805F
IC101 STK4141II
IC102
IC7S1 GP1UM281QK RECEIVER
TUNER TU001 QAU0274-001
SAW FILTER SF101 CE42589-201
SAW FILTER SF201 CE42589-202
SAW FILTER SF301 CE42589-203
SAW FILTER SF401 CE42589-204
SAW FILTER SF501 CE42589-205
SAW FILTER SF601 CE42589-206
SAW FILTER SF651 CEM0065-001
SAW FILTER SF652 CEM0066-001
SAW FILTER SF653 CEM0067-001
SAW FILTER SF654 CEM0068-001
SAW FILTER SF655 CEM0069-001
SAW FILTER SF656 CEM0070-002
SAW FILTER SF657 CEM0071-002
SAW FILTER SF658 CEM0072-002
SP01 CEB0585C039KJ2
SP02
CN100 S1EREO
CN003 MONO
CN000 CRT SOCKET PWB
CN100 EXT CONTROL
J002 QNS0155-001
J003 QNN0349-001
J004 QNN0348-001
POWER SLR-342YPDF RED
QSW0619-003Z
QSW0619-002Z
QSW0619-004Z
QSW0619-005Z
QSW0619-003Z
QSW0619-003Z
QSW0619-003Z
QSW0619-002Z
QSW0619-003Z
QSW0619-003Z
QSW0619-003

MAIN & CRT SOCKET PWB CIRCUIT DIAGRAM

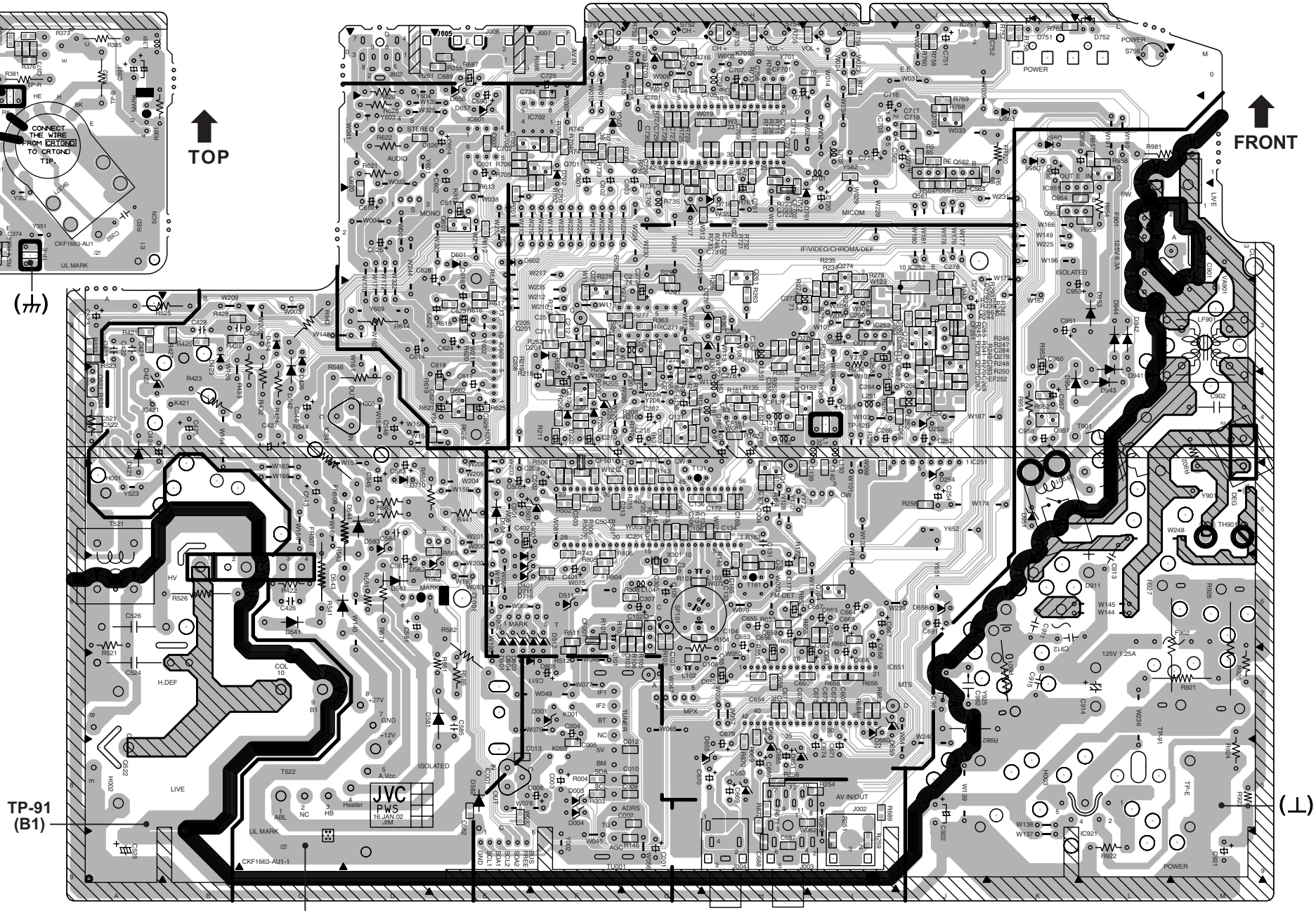


PATTERN DIAGRAMS *MAIN & CRT SOCKET PWB PATTERN*

CRT SOCKET PWB



MAIN PWB



PARTS LIST

CAUTION

- The parts identified by the ⚠ symbol are important for the safety. Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines —— in the Parts No. columns will not be supplied.
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.

ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% -10%	+50% -10%	+80% -20%	+100% -0%

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■ EXPLODED VIEW ····· 29
■ PRINTED WIRING BOARD PARTS LIST

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AV-20321/S

● MAIN PW BOARD ASS'Y(SFV-1083A-M2) (With CRT SOCKET PW BOARD) ····· **34**

■ REMOTE CONTROL UNIT PARTS LIST ····· 34
■ PACKING ····· 35
■ PACKING PARTS LIST ····· 35

EXPLODED VIEW PARTS LIST

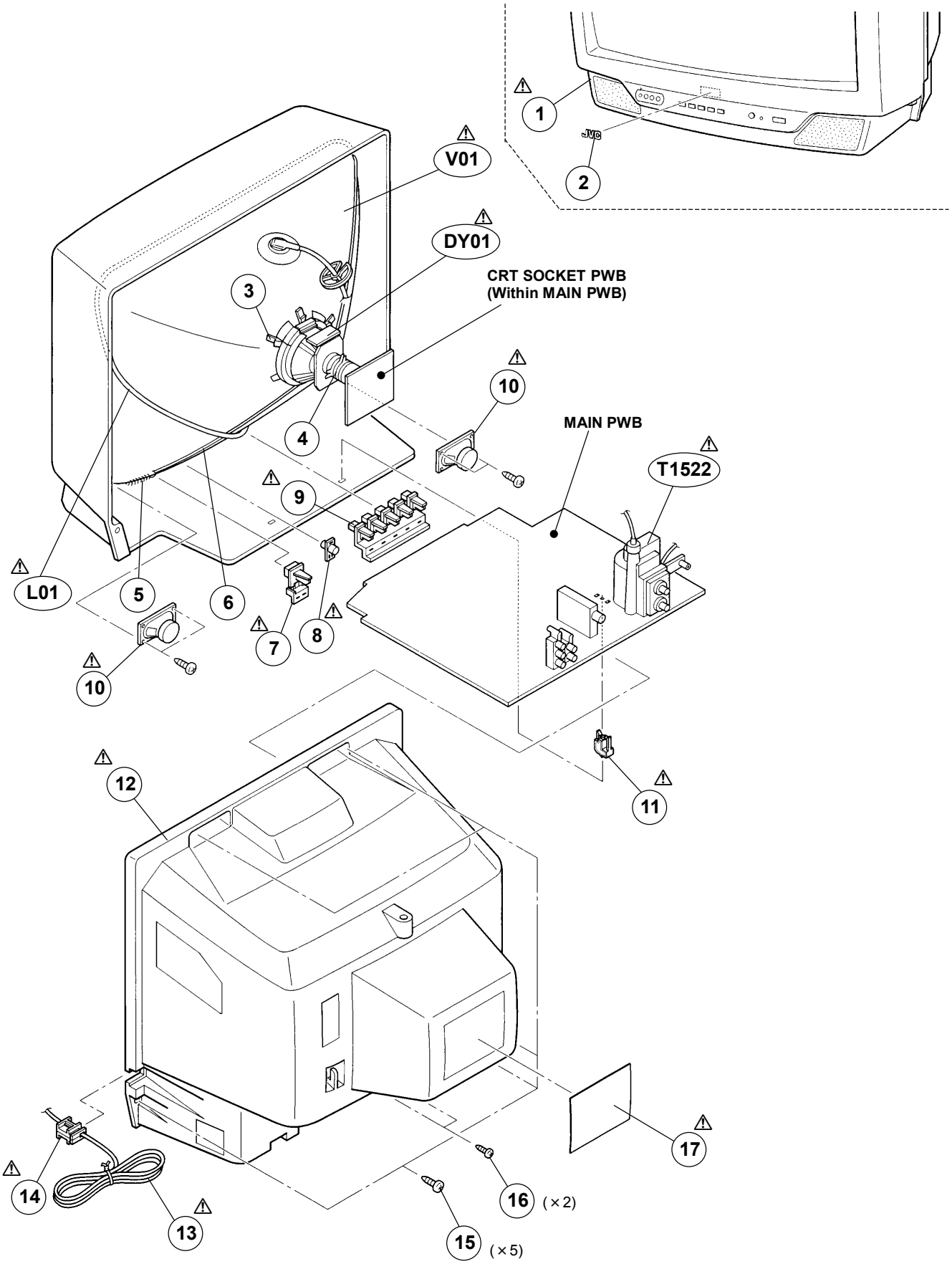
AV-20320/S *Charcoal Model*

⚠	Ref.No.	Part No.	Part Name	Description
⚠	V01	A51KRE89X(DT)	PICTURE TUBE(C)	
⚠	DY01	QQD0011-001	DEF YOKE	
⚠	L01	QQW0002-001	DEG COIL	
⚠	T1522	QQH0030-002	H.V.TRANSF.	
⚠	1	LC10109-016A-A	FRONT CABINET	
	2	CM43094-006-H	JVC MARK	
	3	CE42153-00AJ1	WEDGE ASSY	(×4)
	4	A75034-B	P.C.MAGNET	
	5	A48457-4-S	SPRING	
	6	CHGB0016-0H	BRAIDED WIRE	
⚠	7	LC30376-001A-A	POWER KNOB	
⚠	8	LC30191-001C-A	LENS	
⚠	9	LC30271-001A-A	PUSH KNOB	
⚠	10	CEBSS09D-03KJ2	SPEAKER	(×2)SP01,SP02
⚠	11	CM48144-001-A	P.W.B.STOPPER	
⚠	12	LC10108-001E-A	REAR COVER	
⚠	13	QMPD390-200-JS	POWER CORD	CN10PW(Within MAIN PWB)
⚠	14	LC20106-001D-A	POWER CORD CLAMP	
	15	QYSBSFG4016Z	TAPPING SCREW	(×5)
	16	QYSBSB3010Z	TAPPING SCREW	(×2)
⚠	17	LC31139-001A-A	RATING LABEL	

AV-20321/S *White Model*

⚠	Ref.No.	Part No.	Part Name	Description
⚠	V01	A51KRE89X(DT)	PICTURE TUBE(C)	
⚠	DY01	QQD0011-001	DEF YOKE	
⚠	L01	QQW0002-001	DEG COIL	
⚠	T1522	QQH0030-002	H.V.TRANSF.	
⚠	1	LC10109-017A-A	FRONT CABINET	
	2	CM43094-006-H	JVC MARK	
	3	CE42153-00AJ1	WEDGE ASSY	(×4)
	4	A75034-B	P.C.MAGNET	
	5	A48457-4-S	SPRING	
	6	CHGB0016-0H	BRAIDED WIRE	
⚠	7	LC30376-002A-A	POWER KNOB	
⚠	8	LC30191-001C-A	LENS	
⚠	9	LC30271-002A-A	PUSH KNOB	
⚠	10	CEBSS09D-03KJ2	SPEAKER	(×2)SP01, SP02
⚠	11	CM48144-001-A	P.W.B.STOPPER	
⚠	12	LC10108-003D-A	REAR COVER	
⚠	13	QMPD209-200-JC	POWER CORD	CN10PW(Within MAIN PWB)
⚠	14	LC20106-002C-A	POWER CORD CLAMP	
	15	QYSBSFG4016Z	TAPPING SCREW	(×5)
	16	QYSBSB3010Z	TAPPING SCREW	(×2)
⚠	17	LC31139-001A-A	RATING LABEL	

EXPLODED VIEW



PRINTED WIRING BOARD PARTS LIST

[AV-20320/S]

MAIN P.W. BOARD ASS'Y (SFV-1077A-M2)

⚠	Symbol No.	Part No.	Part Name	Description	
	RESISTOR				
	R1003-04	NRSA63J-0R0X	MG R	0.0Ω 1/16W	J
	R1101	NRSA63J-820X	MG R	82Ω 1/16W	J
	R1102	NRSA63J-562X	MG R	5.6kΩ 1/16W	J
	R1103	NRSA63J-182X	MG R	1.8kΩ 1/16W	J
	R1104	QRE121J-101Y	C R	100Ω 1/2W	J
	R1105	NRSA63J-180X	MG R	18Ω 1/16W	J
	R1106	NRSA63J-270X	MG R	27Ω 1/16W	J
	R1131	NRSA63J-271X	MG R	270Ω 1/16W	J
	R1133	NRSA63J-101X	MG R	100Ω 1/16W	J
	R1134	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1135	NRSA63J-561X	MG R	560Ω 1/16W	J
	R1136	NRSA63J-821X	MG R	820Ω 1/16W	J
	R1137	NRSA63J-152X	MG R	1.5kΩ 1/16W	J
	R1138	NRSA63J-821X	MG R	820Ω 1/16W	J
	R1142	NRSA63J-101X	MG R	100Ω 1/16W	J
	R1145	NRSA63J-472X	MG R	4.7kΩ 1/16W	J
	R1146	NRSA63J-562X	MG R	5.6kΩ 1/16W	J
	R1161-62	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1163	NRSA63J-472X	MG R	4.7kΩ 1/16W	J
	R1164	NRSA63J-332X	MG R	3.3kΩ 1/16W	J
	R1204	NRSA63J-0R0X	MG R	0.0Ω 1/16W	J
	R1205	NRSA63J-152X	MG R	1.5kΩ 1/16W	J
	R1208	NRSA63J-472X	MG R	4.7kΩ 1/16W	J
	R1209	NRSA63J-471X	MG R	470Ω 1/16W	J
	R1210	NRSA63J-392X	MG R	3.9kΩ 1/16W	J
	R1211	NRSA63J-471X	MG R	470Ω 1/16W	J
	R1212	NRSA63J-103X	MG R	10kΩ 1/16W	J
	R1213	NRSA63J-391X	MG R	390Ω 1/16W	J
	R1215	NRSA63J-334X	MG R	330kΩ 1/16W	J
	R1216	NRSA63J-563X	MG R	56kΩ 1/16W	J
	R1218	NRSA63J-182X	MG R	1.8kΩ 1/16W	J
	R1219	NRSA63J-122X	MG R	1.2kΩ 1/16W	J
	R1251	NRSA63J-750X	MG R	75Ω 1/16W	J
	R1255	NRSA63J-750X	MG R	75Ω 1/16W	J
	R1263	NRSA63J-101X	MG R	100Ω 1/16W	J
	R1265	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1271-72	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1278	NRSA63J-152X	MG R	1.5kΩ 1/16W	J
	R1290	NRSA63J-563X	MG R	56kΩ 1/16W	J
	R1291	NRSA63J-473X	MG R	47kΩ 1/16W	J
	R1298	NRSA63J-0R0X	MG R	0.0Ω 1/16W	J
	R1305	NRSA63J-393X	MG R	39kΩ 1/16W	J
	R1306	NRSA63J-183X	MG R	18kΩ 1/16W	J
	R1351	NRSA63J-152X	MG R	1.5kΩ 1/16W	J
	R1352	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1354	NRSA63J-272X	MG R	2.7kΩ 1/16W	J
	R1365	NRSA63J-152X	MG R	1.5kΩ 1/16W	J
	R1366	NRSA63J-563X	MG R	56kΩ 1/16W	J
	R1367	NRSA63J-333X	MG R	33kΩ 1/16W	J
	R1371-73	NRSA63J-151X	MG R	150Ω 1/16W	J
	R1374-76	NRSA63J-331X	MG R	330Ω 1/16W	J
	R1377-79	NRSA63J-101X	MG R	100Ω 1/16W	J
	R1380-82	QRZ0111-152	C R	1.5kΩ 1/2W	K
	R1383-85	QRL029J-123	OM R	12kΩ 2W	J
	R1386-88	NRSA63J-272X	MG R	2.7kΩ 1/16W	J
	R1421	NRSA63J-472X	MG R	4.7kΩ 1/16W	J
	R1422	QRE121J-391Y	C R	390Ω 1/2W	J
	R1423	QRX01GJ-1R5	MF R	1.5Ω 1W	J
	R1425	NRSA63J-683X	MG R	68kΩ 1/16W	J
	R1427	NRSA63J-392X	MG R	3.9kΩ 1/16W	J
	R1428	NRSA63J-393X	MG R	39kΩ 1/16W	J
	R1429	NRSA63J-223X	MG R	22kΩ 1/16W	J
	R1441	QRE121J-102Y	C R	1kΩ 1/2W	J
	R1501	NRSA63J-361X	MG R	360Ω 1/16W	J
	R1502	NRSA63J-152X	MG R	1.5kΩ 1/16W	J
	R1505	NRSA63J-822X	MG R	8.2kΩ 1/16W	J
	R1506	NRSA63J-222X	MG R	2.2kΩ 1/16W	J

⚠	Symbol No.	Part No.	Part Name	Description	
	RESISTOR				
	R1507	NRSA63J-563X	MG R	56kΩ 1/16W	J
	R1511	NRSA63J-681X	MG R	680Ω 1/16W	J
	R1512	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1521	QRE121J-220Y	C R	22Ω 1/2W	J
	R1522	NRSA63J-391X	MG R	390Ω 1/16W	J
	R1523	NRSA63J-471X	MG R	470Ω 1/16W	J
	R1524	QRE121J-271Y	C R	270Ω 1/2W	J
	R1525	QRL029J-121	OM R	120Ω 2W	J
	R1526	QRL039J-152	OM R	1.5kΩ 3W	J
	R1541	QRT029J-1R8	MF R	1.8Ω 2W	J
	R1542	QRL029J-101	OM R	100Ω 2W	J
	R1543	QRT039J-1R0	MF R	1.0Ω 3W	J
	R1544	QRT039J-2R2	MF R	2.2Ω 3W	J
	R1546	QRL029J-220	OM R	22Ω 2W	J
	R1561	QRK126J-4R7X	C R	4.7Ω 1/2W	J
⚠	R1562	NRZ0032-7151X	MF R	7.15kΩ 1/10W±0.5%	
⚠	R1563	NRZ0032-3241X	MF R	3.24kΩ 1/10W±0.5%	
	R1564	NRSA63J-153X	MG R	15kΩ 1/16W	J
	R1565	NRSA63J-0R0X	MG R	0.0Ω 1/16W	J
	R1566	NRSA63J-333X	MG R	33kΩ 1/16W	J
	R1567	NRSA63J-392X	MG R	3.9kΩ 1/16W	J
	R1568	NRSA63J-223X	MG R	22kΩ 1/16W	J
	R1571	QRX01GJ-1R2	MF R	1.2Ω 1W	J
	R1581	QRJ146J-2R2X	C R	2.2Ω 1/4W	J
	R1582	QRL029J-223	OM R	22kΩ 2W	J
	R1583	QRE121J-333Y	C R	33kΩ 1/2W	J
	R1584	QRE121J-393Y	C R	39kΩ 1/2W	J
	R1585	QRE121J-103Y	C R	10kΩ 1/2W	J
	R1586	QRE121J-472Y	C R	4.7kΩ 1/2W	J
	R1615-16	NRSA63J-123X	MG R	12kΩ 1/16W	J
	R1617-18	NRSA63J-332X	MG R	3.3kΩ 1/16W	J
	R1619-20	NRSA63J-561X	MG R	560Ω 1/16W	J
	R1621	QRE121J-4R7Y	C R	4.7Ω 1/2W	J
	R1622	QRE121J-4R7Y	C R	4.7Ω 1/2W	J
	R1625	NRSA63J-333X	MG R	33kΩ 1/16W	J
	R1627	NRSA63J-101X	MG R	100Ω 1/16W	J
	R1628-29	QRE121J-271Y	C R	270Ω 1/2W	J
	R1651	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1652-53	NRSA63J-682X	MG R	6.8kΩ 1/16W	J
	R1654	NRSA63J-333X	MG R	33kΩ 1/16W	J
	R1655	NRSA63J-332X	MG R	3.3kΩ 1/16W	J
	R1656	NRVA02D-152X	MF R	1.5kΩ 1/10W	D
	R1658	NRVA02D-153X	MF R	15kΩ 1/10W	D
	R1660	NRSA63J-512X	MG R	5.1kΩ 1/16W	J
	R1669-70	NRSA63J-471X	MG R	470Ω 1/16W	J
	R1671-72	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1682	NRSA63J-683X	MG R	68kΩ 1/16W	J
	R1683-84	NRSA63J-561X	MG R	560Ω 1/16W	J
	R1687-88	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1701	NRSA63J-563X	MG R	56kΩ 1/16W	J
	R1702	NRSA63J-103X	MG R	10kΩ 1/16W	J
	R1704	NRSA63J-103X	MG R	10kΩ 1/16W	J
	R1705	NRSA63J-823X	MG R	82kΩ 1/16W	J
	R1706	NRSA63J-103X	MG R	10kΩ 1/16W	J
	R1708-09	NRSA63J-103X	MG R	10kΩ 1/16W	J
	R1710	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1713	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1714	NRSA63J-471X	MG R	470Ω 1/16W	J
	R1715	NRSA63J-105X	MG R	1MΩ 1/16W	J
	R1716	NRSA63J-154X	MG R	150kΩ 1/16W	J
	R1717	NRSA63J-563X	MG R	56kΩ 1/16W	J
	R1719	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1721-22	NRSA63J-0R0X	MG R	0.0Ω 1/16W	J
	R1723	NRSA63J-105X	MG R	1MΩ 1/16W	J
	R1724	NRSA63J-102X	MG R	1kΩ 1/16W	J
	R1725	NRSA63J-103X	MG R	10kΩ 1/16W	J
	R1726	NRSA63J-392X	MG R	3.9kΩ 1/16W	J

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⚠	Symbol No.	Part No.	Part Name	Description
	RESISTOR			
	R1727	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1728	NRSA63J-392X	MG R	3.9kΩ 1/16W J
	R1729	NRSA63J-153X	MG R	15kΩ 1/16W J
	R1730	NRSA63J-682X	MG R	6.8kΩ 1/16W J
	R1732	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1734	NRSA63J-182X	MG R	1.8kΩ 1/16W J
	R1735	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1736	NRSA63J-332X	MG R	3.3kΩ 1/16W J
	R1737	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1738	NRSA63J-152X	MG R	1.5kΩ 1/16W J
	R1739	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1740	NRSA63J-152X	MG R	1.5kΩ 1/16W J
	R1741	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1742	NRSA63J-152X	MG R	1.5kΩ 1/16W J
	R1743-44	NRSA63J-0R0X	MG R	0.0Ω 1/16W J
	R1745-46	NRSA63J-561X	MG R	560Ω 1/16W J
	R1751	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1752	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1753	NRSA63J-153X	MG R	15kΩ 1/16W J
	R1754	NRSA63J-103X	MG R	10kΩ 1/16W J
	R1755	NRSA63J-472X	MG R	4.7kΩ 1/16W J
	R1756	NRSA63J-153X	MG R	15kΩ 1/16W J
	R1757-58	NRSA63J-122X	MG R	1.2kΩ 1/16W J
	R1759-60	NRSA63J-101X	MG R	100Ω 1/16W J
	R1765-66	NRSA63J-0R0X	MG R	0.0Ω 1/16W J
	R1768	NRSA63J-473X	MG R	47kΩ 1/16W J
	R1769	NRSA63J-102X	MG R	1kΩ 1/16W J
	R1804-06	NRSA63J-101X	MG R	100Ω 1/16W J
⚠	R1901	QRF054K-1R0	UNF R	1.0Ω 5W K
⚠	R1921	QRX029J-2R7	MF R	2.7Ω 2W J
	R1923	QRJ146J-470X	C R	47Ω 1/4W J
	R1924	QRN141J-334Y	C R	330kΩ 1/4W J
	R1925	QRN141J-123Y	C R	12kΩ 1/4W J
⚠	R1926	QRF154J-271	UNF R	270 Ω 15W J
	R1952	NRSA63J-222X	MG R	2.2kΩ 1/16W J
	R1953	NRSA63J-122X	MG R	1.2kΩ 1/16W J
	R1954	QRE121J-102Y	C R	1kΩ 1/2W J
	R1955	NRSA63J-223X	MG R	22kΩ 1/16W J
	R1956	QRE121J-101Y	C R	100Ω 1/2W J
	R1957	NRSA63J-222X	MG R	2.2kΩ 1/16W J
	R1958	NRSA63J-103X	MG R	10kΩ 1/16W J
⚠	R1981	QRZ9041-275	C R	2.7MΩ 1/2W K
	CAPACITOR			
	C1001	QETN1HM-106Z	E CAP.	10µF 50V M
	C1003	QETN1AM-227Z	E CAP.	220µF 10V M
	C1004	QETN1HM-106Z	E CAP.	10µF 50V M
	C1005	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1006	QETN1EM-476Z	E CAP.	47µF 25V M
	C1012	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1013	NCB31HK-104X	CHIP CAP.	0.1µF 50V K
	C1101-04	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1105	QETN1CM-107Z	E CAP.	100µF 16V M
	C1106	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1108	NDC31HJ-680X	C CAP.	68pF 50V J
	C1131	QFV71HJ-154Z	MF CAP.	0.15µF 50V J
	C1132	NCB31HK-152X	C CAP.	1500pF 50V K
	C1133	QETN1HM-474Z	E CAP.	0.47µF 50V M
	C1134	NCB31HK-472X	C CAP.	4700pF 50V K
	C1135	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1138	QETN1EM-476Z	E CAP.	47µF 25V M
	C1161	QETN1CM-107Z	E CAP.	100µF 16V M
	C1162	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1163-64	NDC31HJ-470X	C CAP.	47pF 50V J
	C1166	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1167	NDC31HJ-470X	C CAP.	47pF 50V J
	C1169-70	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1207	QETN1HM-474Z	E CAP.	0.47µF 50V M
	C1208	QETN1HM-106Z	E CAP.	10µF 50V M
	C1209-10	QETN1HM-105Z	E CAP.	1.0µF 50V M
	C1212	NCB31HK-104X	CHIP CAP.	0.1µF 50V K

⚠	Symbol No.	Part No.	Part Name	Description
	CAPACITOR			
	C1214	QETN1HM-106Z	E CAP.	10µF 50V M
	C1215	QETN1HM-105Z	E CAP.	1.0µF 50V M
	C1217	QETN1EM-476Z	E CAP.	47µF 25V M
	C1252	QETN1HM-106Z	E CAP.	10µF 50V M
	C1254-55	QETN1HM-106Z	E CAP.	10µF 50V M
	C1274	QETN1HM-105Z	E CAP.	1.0µF 50V M
	C1303	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1304	QETN1CM-107Z	E CAP.	100µF 16V M
	C1305	NDC31HJ-100X	C CAP.	10pF 50V J
	C1306	NCB31HK-223X	CHIP CAP.	0.022µF 50V K
	C1307	QETN1HM-474Z	E CAP.	0.47µF 50V M
	C1309	NDC31HJ-2R0X	C CAP.	2.0pF 50V J
	C1352	NDC31HJ-680X	C CAP.	68pF 50V J
	C1355	NDC31HJ-150X	C CAP.	15pF 50V J
	C1356	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1374-75	NDC31HJ-271X	C CAP.	270pF 50V J
	C1376	NDC31HJ-331X	C CAP.	330pF 50V J
	C1377	QETN1EM-476Z	E CAP.	47µF 25V M
	C1391	QETM2EM-336	E CAP.	33µF 250V M
⚠	C1392	QCZ0121-102	C CAP.	1000pF 3kV Z
	C1401	QETN1HM-225Z	E CAP.	2.2µF 50V M
	C1402	QBHC1CK-225Z	TAN.CAP.	2.2µF 16V K
	C1403	NCB31HK-102X	C CAP.	1000pF 50V K
	C1421	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1424	QETN1VM-107Z	E CAP.	100µF 35V M
	C1425	QETN1VM-477Z	E CAP.	470µF 35V M
	C1426	QFLC2AK-104Z	M CAP.	0.1µF 100V K
	C1427	QETM1EM-228	E CAP.	2200µF 25V M
	C1428	QFV21HJ-474Z	MF CAP.	0.47µF 50V J
	C1429	QFV21HJ-224Z	MF CAP.	0.22µF 50V J
	C1501	QETN1CM-107Z	E CAP.	100µF 16V M
	C1502	QETN1HM-106Z	E CAP.	10µF 50V M
	C1503	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1505	QETN1HM-106Z	E CAP.	10µF 50V M
	C1511	QETN1EM-476Z	E CAP.	47µF 25V M
	C1521	NCB31HK-332X	C CAP.	3300pF 50V K
	C1522	NCB31HK-822X	CHIP CAP.	8200pF 50V K
	C1523	QEM61HK-105Z	E CAP.	1µF 50V K
⚠	C1524	QFZ0198-792	MPP CAP.	7900pF1.5kVH±3%
⚠	C1525	QEZ0203-107	E CAP.	100µF 160V M
⚠	C1526	QFZ0210-534	MPP CAP.	0.53µF 250V±3%
	C1543	QETN1VM-477Z	E CAP.	470µF 35V M
	C1545	QETN1CM-227Z	E CAP.	220µF 16V M
	C1546	QETN1CM-477Z	E CAP.	470µF 16V M
	C1548	QETN1CM-227Z	E CAP.	220µF 16V M
⚠	C1561	QETN1HM-106Z	E CAP.	10µF 50V M
	C1562	QETN1HM-475Z	E CAP.	4.7µF 50V M
	C1563	NCB31HK-103X	C CAP.	0.01µF 50V K
⚠	C1581	QETN2EM-106Z	E CAP.	10µF 250V M
	C1582	NCB31HK-473X	CHIP CAP.	0.047µF 50V K
	C1583	QETN1HM-106Z	E CAP.	10µF 50V M
	C1584	QFLC2AJ-104Z	M CAP.	0.1µF 100V J
	C1614	QETN1EM-108Z	E CAP.	1000µF 25V M
	C1616	QENC1HM-474Z	BP E CAP.	0.47µF 50V M
	C1617	QETN1EM-476Z	E CAP.	47µF 25V M
	C1618	QETN1CM-107Z	E CAP.	100µF 16V M
	C1619	QETN1CM-477Z	E CAP.	470µF 16V M
	C1620	NCB31HK-104X	CHIP CAP.	0.1µF 50V K
	C1622	QENC1HM-474Z	BP E CAP.	0.47µF 50V M
	C1623	QETN1EM-476Z	E CAP.	47µF 25V M
	C1624	QETN1CM-107Z	E CAP.	100µF 16V M
	C1625	QETN1CM-477Z	E CAP.	470µF 16V M
	C1626	NCB31HK-104X	CHIP CAP.	0.1µF 50V K
	C1627	QETN1CM-477Z	E CAP.	470µF 16V M
	C1651	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1652	QETN1CM-107Z	E CAP.	100µF 16V M
	C1653	QETN1EM-476Z	E CAP.	47µF 25V M
	C1654	NCB31HK-104X	CHIP CAP.	0.1µF 50V K
	C1655	QENC1HM-475Z	BP E CAP.	4.7µF 50V M
	C1656	QENC1HM-105Z	BP E CAP.	1.0µF 50V M
	C1657	QETN1HM-225Z	E CAP.	2.2µF 50V M
	C1658	NCB31HK-473X	CHIP CAP.	0.047µF 50V K

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CAPACITOR

⚠	Symbol No.	Part No.	Part Name	Description
	C1659	QETN1HM-474Z	E CAP.	0.47µF 50V M
	C1660-61	NCB31HK-104X	CHIP CAP.	0.1µF 50V K
	C1662	QBTC1CK-335Z	TAN.CAP.	3.3µF 16V K
	C1663	QETN1HM-105Z	E CAP.	1.0µF 50V M
	C1664	QBTC1CK-106Z	TAN.CAP.	10µF 16V K
	C1665-66	QETN1HM-105Z	E CAP.	1.0µF 50V M
	C1667	QETN1HM-336Z	E CAP.	33µF 50V M
	C1668	QETN1HM-105Z	E CAP.	1.0µF 50V M
	C1669-70	QETN1HM-106Z	E CAP.	10µF 50V M
	C1671	QETN1HM-225Z	E CAP.	2.2µF 50V M
	C1672	NCB31HK-222X	C CAP.	2200pF 50V K
	C1673	NCB31HK-104X	CHIP CAP.	0.1µF 50V K
	C1674	QETN1HM-225Z	E CAP.	2.2µF 50V M
	C1675	NCB31HK-222X	C CAP.	2200pF 50V K
	C1676	NCB31HK-104X	CHIP CAP.	0.1µF 50V K
	C1679	QETN1HM-105Z	E CAP.	1.0µF 50V M
	C1685-86	QETN1HM-106Z	E CAP.	10µF 50V M
	C1687-88	NCB31HK-472X	C CAP.	4700pF 50V K
	C1689-90	QETN1HM-106Z	E CAP.	10µF 50V M
	C1702	NCB31HK-272X	CHIP CAP.	2700pF 50V K
	C1704	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1705	NDC31HJ-151X	C CAP.	150pF 50V J
	C1706	NCB31HK-104X	CHIP CAP.	0.1µF 50V K
	C1707	QETN1HM-105Z	E CAP.	1.0µF 50V M
	C1708	NCS21HJ-221X	C CAP.	220pF 50V J
	C1709	NCS21HJ-102X	C CAP.	1000pF 50V J
	C1710	NDC31HJ-681X	C CAP.	680pF 50V J
	C1711	QETN1HM-474Z	E CAP.	0.47µF 50V M
	C1712	NCB31HK-102X	C CAP.	1000pF 50V K
	C1714	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1716	QETN1EM-476Z	E CAP.	47µF 25V M
	C1717	NCB31HK-104X	CHIP CAP.	0.1µF 50V K
	C1718	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1719-20	QETN1EM-476Z	E CAP.	47µF 25V M
	C1721	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1722-23	NDC31HJ-5ROX	C CAP.	5.0pF 50V J
	C1724	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1725	QETN1AM-227Z	E CAP.	220µF 10V M
	C1726	NDC31HJ-470X	C CAP.	47pF 50V J
	C1735	NCB31HK-103X	C CAP.	0.01µF 50V K
	C1751	QETN1EM-476Z	E CAP.	47µF 25V M
	C1801-03	QENC1HM-474Z	BP E CAP.	0.47µF 50V M
⚠	C1901	QFZ9072-104	MF CAP.	0.1µFAC275V K
⚠	C1902	QFZ9072-473	MF CAP.	0.047µFAC275V K
⚠	C1911	QCZ9074-472	C CAP.	4700pFAC250V M
⚠	C1912	QCZ9074-472	C CAP.	4700pFAC250V M
⚠	C1913	QCZ9074-472	C CAP.	4700pFAC250V M
⚠	C1914	QEZ0169-337	E CAP.	330µF 200V M
	C1921	QEHR2CM-335Z	E CAP.	3.3µF 160V M
	C1922	QEHQ2CM-336	E CAP.	33µF 160V M
	C1951	QETN1EM-227Z	E CAP.	220µF 25V M
	C1953	QETN1EM-107Z	E CAP.	100µF 25V M
	C1954	NCB31HK-473X	CHIP CAP.	0.047µF 50V K
	C1956	QETN1HM-106Z	E CAP.	10µF 50V M
	C1958	QETN1EM-107Z	E CAP.	100µF 25V M
	C1959	QETN1HM-226Z	E CAP.	22µF 50V M
⚠	C1981	QCZ9074-103	C CAP.	0.01µFAC250V M
⚠	C1982	QCZ9074-103	C CAP.	0.01µFAC250V M

TRANSFORMER

⚠	Symbol No.	Part No.	Part Name
	T1131	QQR0907-001	I.F.TRANSFOMER
	T1161	CELT003-109J3	S.I.F.TRANSF.
⚠	T1521	CE41106-00CJ1	DRIVE TRANSF.
⚠	T1522	QQH0030-002	H.V.TRANSF.
⚠	T1901	QQT0198-001	POWER TRANSF.

COIL

⚠	Symbol No.	Part No.	Part Name	Description
	L1102	QQLZ014-R22	PEAKING COIL	0.22µH
	L1104	QQL03BJ-680Z	COIL	68µH J
	L1131	QQL03BJ-220Z	COIL	22µH J
	L1161	QQL03BJ-680Z	COIL	68µH J

COIL

⚠	Symbol No.	Part No.	Part Name	Description
	L1162	QQL03BJ-390Z	COIL	39µH J
	L1351	QQL03BJ-220Z	COIL	22µH J
	L1391	QQL03BJ-390Z	COIL	39µH J
	L1701	QQL03BJ-4R7Z	COIL	4.7µH J
	L1709	QQL03BJ-100Z	COIL	10µH J

DIODE

⚠	Symbol No.	Part No.	Part Name
	D1001	MTZJ33B-T2	ZENER DIODE
	D1003-04	MTZJ9.1C-T2	ZENER DIODE
	D1201	1SS133-T2	SI.DIODE
	D1202	1SS133-T2	SI.DIODE
	D1203	1SS133-T2	SI.DIODE
	D1251-52	MTZJ9.1C-T2	ZENER DIODE
	D1254	MTZJ9.1C-T2	ZENER DIODE
	D1421	1N4003-T2	SI.DIODE
	D1422	MTZJ75-T2	ZENER DIODE
	D1423	1SS133-T2	SI.DIODE
	D1501	MTZJ9.1C-T2	ZENER DIODE
	D1511	MTZJ3.3A-T2	ZENER DIODE
	D1541	RGP10J-5025-T3	SI.DIODE
	D1542	1SR35-400A-T2	SI.DIODE
	D1543	RGP10J-5025-T3	SI.DIODE
	D1544	RGP10J-5025-T3	SI.DIODE
	D1561	1SS81-T2	SI.DIODE
⚠	D1562	MA4068N/Z1/-T2	ZENER DIODE
	D1563	1SS133-T2	SI.DIODE
⚠	D1581	RH1S-T3	SI.DIODE
	D1582	RGP10J-5025-T3	SI.DIODE
	D1583	MTZJ9.1C-T2	ZENER DIODE
	D1601	1SS133-T2	SI.DIODE
	D1602	1SS133-T2	SI.DIODE
	D1651-53	MTZJ9.1C-T2	ZENER DIODE
	D1655-57	MTZJ9.1C-T2	ZENER DIODE
	D1659-60	MTZJ9.1C-T2	ZENER DIODE
	D1703	MTZJ5.6A-T2	ZENER DIODE
	D1704	1SS133-T2	SI.DIODE
	D1717-18	MTZJ9.1C-T2	ZENER DIODE
	D1751	SLR-342VR3F	L.E.D.
	D1804	MTZJ5.1B-T2	ZENER DIODE
	D1805	1SS133-T2	SI.DIODE
⚠	D1911	D3SB60	BRIDGE DIODE
	D1941-44	1SR35-400A-T2	SI.DIODE
	D1951	MTZJ12C-T2	ZENER DIODE
	D1953	1SR35-400A-T2	SI.DIODE
	D1957	1SS133-T2	SI.DIODE
	D1958	1SS133-T2	SI.DIODE

TRANSISTOR

⚠	Symbol No.	Part No.	Part Name	Description
	Q1101	2SC5083/L-P/-T	SI.TRANSISTOR	
	Q1131-32	2SD601A/QR/-X	SI.TRANSISTOR	
	Q1161	2SD601A/QR/-X	SI.TRANSISTOR	
	Q1202-03	2SD601A/QR/-X	SI.TRANSISTOR	
	Q1261	2SB709A/QR/-X	SI.TRANSISTOR	
	Q1271	2SD601A/QR/-X	SI.TRANSISTOR	
	Q1361	2SD601A/QR/-X	SI.TRANSISTOR	
	Q1371-73	2SC4544-LB	SI.TRANSISTOR	
	Q1521	2SC2655/Y/-T	SI.TRANSISTOR	
⚠	Q1522	2SD1878-YD	SI.TRANSISTOR	H.OUT
	Q1561	2SC2785/JH/-T	SI.TRANSISTOR	
	Q1562	2SA1309A/QR/-T	SI.TRANSISTOR	
	Q1602	DTC323TK-X	DIGI.TRANSISTOR	
	Q1701-03	2SD601A/QR/-X	SI.TRANSISTOR	
	Q1704	DTC323TK-X	DIGI.TRANSISTOR	
	Q1951	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1952	2SA966/OY/-T	SI.TRANSISTOR	
	Q1953	2SC2412K/QR/-X	SI.TRANSISTOR	

IC

⚠	Symbol No.	Part No.	Part Name
	IC1001	AN7805F	I.C(MONO-ANA)
	IC1201	TA1242N	I.C(MONO-ANA)
	IC1251	BA7612N	I.C(MONO-ANA)
⚠	IC1421	LA7830	I.C(MONO-ANA)
	IC1541	AN7809F	I.C(MONO-ANA)
⚠	IC1602	LA4446	I.C(MONO-ANA)

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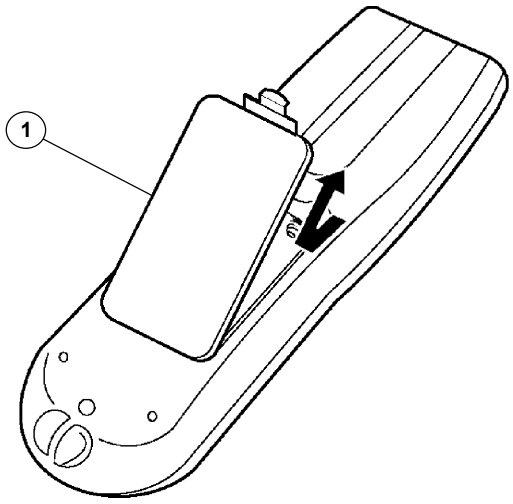
⚠	Symbol No.	Part No.	Part Name	Description
	IC			
	IC1651	UPC1851BCU	I.C(MONO-ANA)	
	IC1701	M37272MAH-501SP	I C	
	IC1702	AT24C02-2032D	I.C	(SERVICE)
	IC1703	L78LR05E-MA	I.C(MONO-ANA)	
	IC1751	GP1UM281QK	IR DETECT UNIT	
⚠	IC1921	STR30134	I.C(H)	
	IC1951	TA78L009AP-T	I.C(MONO-ANA)	
	OTHERS			
		LC30190-001B-A	L.E.D.HOLDER	
	CF1001	QAX0349-001	CERAMIC FILTER	
	CF1131	CE4150S-001	CERAMIC FILTER	
	CF1161	SFSH4.5MCB	CERAMIC FILTER	
	CF1501	CSB503F30-T2	CER.RESONATOR	
	CF1701	CST8.00MTW	CER.RESONATOR	
	CF1702	QAX0428-001	CER.RESONATOR	
	CN10CW	CH41169-R03Y	EH POST HEADER	
⚠	CN10PW	QMPD390-200-JS	POWER CORD	(Charcoal type)
⚠	CN1MPX	QGA2501C5-05Z	EH POST HEADER	
⚠	F1901	QMF51N1-5R0-J5	FUSE	5.0A
⚠	F1902	QMF51U1-1R25-J8	FUSE	1.25A
	FC1901	CEMG002-001Z	FUSE CLIP	(×2)
	FC1902	CEMG002-001Z	FUSE CLIP	(×2)
⚠	FR1720	QRZ9017-820	F R	82 Ω 1/4W J
	J1003	QNN0349-001	PIN JACK	
	J1004	QNN0348-001	PIN JACK	
	J1005	CEMN065-001	PIN JACK	
	J1006	CEMN065-002	PIN JACK	
	J1007	CEMN072-002	PIN JACK	
	J1602	QNS0155-001	JACK	
	K1003	QQR0582-001Z	BEADS CORE	
	K1701	QQR0582-001Z	BEADS CORE	
⚠	LF1901	QQR0864-002	LINE FILTER	
⚠	RY1901	QSK0083-001	RELAY	
	S1751	QSW0619-003Z	PUSH SWITCH	MENU
	S1752	QSW0619-003Z	PUSH SWITCH	CH-
	S1753	QSW0619-003Z	PUSH SWITCH	CH+
	S1754	QSW0619-003Z	PUSH SWITCH	VOL-
	S1755	QSW0619-003Z	PUSH SWITCH	VOL+
⚠	S1756	QSW0619-003Z	PUSH SWITCH	POWER
	SF1101	CE42589-201	SAW FILTER	
⚠	SK1371	QNZ0537-001	C.R.T.SOCKET	
⚠	TH1901	CEKP007-002	P.THERMISTOR	
⚠	TU1001	QAU0274-001	TUNER	
⚠	VA1901	ERZV10V361CS	VARISTOR	
	X1301	QAX0310-001Z	CRYSTAL	

MAIN P.W. BOARD ASS'Y (SFV-1083A-M2) [AV-20321/S]

Regarding the parts list for the main PW board ass'y **SFV-1083A-M2**, only the different parts from those of the **SFV-1077A-M2** are described. For further details regarding the other parts, refer to the parts list for the **SFV-1077A-M2** described on page 30 through page 33.

⚠	Symbol No.	Parts No.		Parts Name	Description
		AV-20320/S SFV-1077A-M2	AV-20321/S SFV-1083A-M2		
⚠	CN10PW	QMPD390-200-JS (Charcoal type)	QMPD209-200-JC (White type)	POWER CORD	

REMOTE CONTROL UNIT PARTS LIST(RM-C205-1C / RM-C205W-1C)



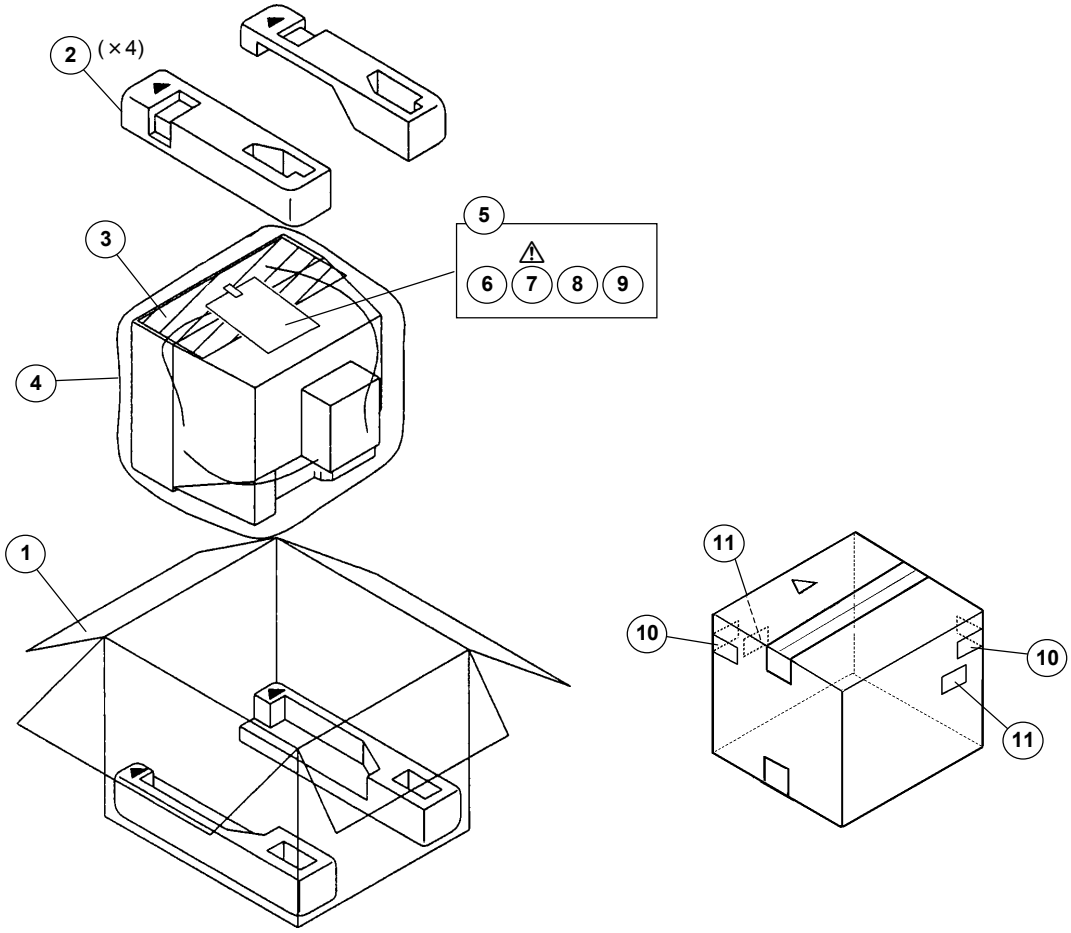
AV-20320/S *Charcoal Model*

⚠ Ref.No.	Part No.	Part Name.	Description
1	511A24001	BATTERY COVER	(RM-C205-1C)

AV-20321/S *White Model*

1	511A24003	BATTERY COVER	(RM-C205W-1C)

PACKING



PACKING PARTS LIST

AV-20320/S *Charcoal Model*

⚠	Ref.No.	Part No.	Part Name	Description
	1	GQ10009-027A-A	PACKING CASE	
	2	LC10116-002A-A	CUSHION ASSY	4pcs in 1set
	3	CP30055-001-A	TOP COVER	
	4	CP30056-009-A	POLY BAG	
	5	QPA02503505	POLY BAG	
	6	RM-C205-1C	REMOCON UNIT	[CHARCOAL TYPE]
⚠	7	LCT1146-001A-A	INST BOOK	
	8	BT-51028-1Q	REGISTRATION CARD	
	9	BT-52004-2Q	WARRANTY CARD	
	10	CM36616-001-A	CORNER LABEL	2pcs in 1set

AV-20321/S *White Model*

⚠	Ref.No.	Part No.	Part Name	Description
	1	GQ10009-027A-A	PACKING CASE	
	2	LC10116-002A-A	CUSION ASSY	4pcs in 1set
	3	CP30055-001-A	TOP COVER	
	4	CP30056-009-A	POLY BAG	
	5	QPA02503505	POLY BAG	
	6	RM-C205W-1C	REMOCON UNIT	[WHITE TYPE]
⚠	7	LCT1146-001A-A	INST BOOK	
	8	BT-51028-1Q	REGISTRATION CARD	
	9	BT-52004-2Q	WARRANTY CARD	
	10	CM36616-001-A	CORNER LABEL	2pcs in 1set
	11	GQ40012-001A-A	WHITE MARK	2pcs in 1set

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